# RESTAURANT RESERVATION SYSTEM

**ONG JUN KIT**

**UNIVERSITI TUNKU ABDUL RAHMAN**

# RESTAURANT RESERVATION SYSTEM

**ONG JUN KIT**

**A project report submitted in partial fulfilment of the requirements for the award of Bachelor of Science (Honours) Software Engineering**

**Lee Kong Chian Faculty of Engineering and Science**
**Universiti Tunku Abdul Rahman**

**September 2021**

# DECLARATION

I hereby declare that this project report is based on my original work except for citations and quotations which have been duly acknowledged. I also declare that it has not been previously and concurrently submitted for any other degree or award at UTAR or other institutions.

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**APPROVAL FOR SUBMISSION**

I certify that this project report entitled **"RESTAURANT RESERVATION SYSTEM"** was prepared by **ONG JUN KIT** has met the required standard for submission in partial fulfilment of the requirements for the award of Bachelor of Science (Honours) Software Engineering at Universiti Tunku Abdul Rahman.

Approved by,

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Supervisor : Ms Gunavathi Duraisamy

Date : 23 Sept 2021

Signature :

Co-Supervisor :

Date :

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Furthermore, I would also like to express my gratitude to my loving parents and friends who had helped and given me encouragement and support along the way. Without their support and motivation, it would be impossible for me to accomplish the project.

## ABSTRACT

Many businesses have digitally transformed their business model with modern digital technology to give themselves a competitive advantage in the market. In order to catch up the business digitalization trends, many catering industries have begun to run their reservation management online. On the contrary, some restaurants use traditional and paper-based approach in table booking management, which is inefficient and ineffective. Furthermore, customers may face some challenges in making a reservation with the restaurant staff without a proper channel. Hence, in this project, web-based restaurant reservation system is developed to solve the problems faced both customers and restaurateurs.

Prototyping methodology was implemented in web-based system development. This methodology consists of four phases such as requirement gathering and analysis, quick design, building prototype, customer evaluation and engineer product. Prototype was built and gone through three iterations. The new features were added in refining prototype phase in each iteration. In the first iteration, the user interface design and web-pages navigation were designed, sketched, and developed. In second iteration, backend of the system such as SQL database connection, CRUD functionalities, and essential features. In third iteration, all the functionalities derived from functional requirement and scope of this project were developed.

In conclusion, web-based restaurant reservation was developed to aid the restaurateurs to manage the incoming reservation made by their customers without any paper-based approach. With this system, restaurateurs could manage food pre-ordered by customers, restaurant menu, view report and export reservation list and report. Furthermore, customers, also known as diners could make a reservation as well as modify and cancel reservation with ease. Other than table booking feature, customers could also pre-order foods for the reservation and modify it in effective and time-saving way. All the functionalities and features in this system were tested with the designed requirement-based test cases. All the test cases were executed and passed. Therefore, all the functional and non-functional requirements were fulfilled and the project objectives were achieved as well.

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# CHAPTER 1

# INTRODUCTION

## 1.1 Introduction

This project mainly aims to develop a web-based system for restaurant owner to monitor and manage all the reservations made by customers as well as their restaurant menu for customers to make orders for their reservations. Besides, customers can make changes on their reservations and orders through this web-based system as well.

## 1.2 Background

Since the mid-2000s, the rapid growth of restaurant industry has influenced the economy of Malaysia. Many people prefer to start a restaurant business because it is an easy and small business especially for people who has limited budget on their hand. A good service is crucial to be provided to customers to increase restaurant sales. As customer base and restaurant business are grown and expanded, it becomes common for restaurant owners to handle large number of table bookings from their customers. Restaurant owners often encountered problem of limited tables for customers during peaks hours such as lunch time as well as dinner time due to large customer base. Therefore, restaurant owner usually will allow their customers to make reservations in advance so that their customers can avoid long waiting time for tables.

Normally, the traditional ways to book an available restaurant table are via phone calls, messaging, or even through walk-in. After customers have successfully booked the table, the restaurant staff or owner needs to record the booking details. The booking details include number of people, contact information, date and time. Some restaurants still record all the booking made by customers on paper or make a noting in mobile phone. As the years goes on, the table reservation can be completed online with restaurant reservation system. Some restaurants have their own simple reservation system on their official website so that customers can easily find their website and make a reservation. Moreover, some restaurants pay the third-party reservation system monthly or annually for their business.

Thus, in this project, web-based restaurant reservation system can be served as a reservation management tools for restaurant owner to manage and keep track the reservations digitally. Moreover, it will also serve as a table booking platform for customers to book a table in advance through online instead of phone call or messaging. Besides that, the system will allow customers to pre-order foods after they make reservations.

## 1.3 Problem Statement

The three main problems faced by restaurant owner and customers are identified. The first problem statement is the multiple traditional table reservation channel. The second problem statement is the issue of customer waiting time. Moreover, the last problem statement is the problem of traditional method of recording table reservation.

### 1.3.1 Multiple Traditional Table Reservation Channels

Service quality is one of the critical factors that influence the customer satisfaction in restaurant industry (Quang et al., 2018). Some restaurants might have various type of traditional channels for their customers to make table reservation in advance such as phone call, email, social media, SMS and so on to improve service quality. However, according to the research from Parikh (2016), if the number of channels used to serve customers increases, the overall service quality will be affected negatively due to increase of complexities in managing the demand. Besides that, the research also shows that, the restaurant will face the challenge in paying the high cost-to-serve as the channels mentioned are labour intensive (Parikh, 2016).

To solve this problem, restaurant reservation system could help in replacing all the traditional channels such as phone calls, email, and SMS to make table reservations online as well as simplifying the reservation management to improve service quality.

### 1.3.2 Issue of Customer Waiting Time

When customers walk-in to the restaurant and realize they need to wait for the table due to all tables are full of customers, they will waste their precious time on waiting for the tables and starving. Other than that, since the restaurant is crowded with customers, the waiters or staff will be busy with serving the arrived customers while

customers who previously book a table are waiting waiters to arrange tables for them. Then, it is wasting customers' time when staff need to check the reservation recorded on paper or in messaging application for arriving customers. Other than these issues, the survey results from questionnaire showed that customers encounter the problem of late reply from restaurant and time-consuming when making a table booking.

Furthermore, ordering food could be headache for customers and restaurant staff or waiters when there are many customers needed to be served. Some restaurants are required waiters to take order for customers. If customers take too long to order the meals, the restaurant service will be affected due to unavailability of waiter for a period of time, and other customers have to wait their turn to take order.

A recent study by Letsa (2017) concluded that satisfaction of customers could be affected negatively if customers' waiting spent in the restaurant is too long. Lesta (2017) also explained that the long waiting time indicated the failure to match demand with supply and this affect the service delivery. To solve this issue, restaurant reservation system comes in handy to record all the reservations made by customers online. Restaurant staff can easily search and check all the reservations in the system instead of looking for the paper that records reservations' details. In addition, the problems of ordering food could be solved by pre-ordering feature in system. This feature allows customers to pre-order their food after they make a reservation in the system so they get to enjoy the meals immediately after they arrive to the restaurant.

### 1.3.3 Problem of Traditional Method of Recording Table Reservation

A research conducted by Cunninghams EPOS Group (2018) showed that there is a large number of restaurant owner and manager using the pen and paper diary to record their table booking details. Moreover, the questionnaire survey results showed that the 16 out of 24 respondents using paper-based approach such as pencil, notebook, calendar and so on to keep and manage the reservation records. Minority of respondents used notebook application available in mobile phone and laptop to do so.

Based on the survey results collected from questionnaire, majority of restaurant staff encounter many challenges in checking availability of tables reservation, searching customer's reservation record and contacting customer during

restaurant's peak hour. To solve this problem, Restaurant reservation system can allow restaurant owner or manager to record the reservation digitally as well as eliminate the paper-based approach for recording table reservation.

## 1.4 Project Objectives

1. To study the current problem faced by restaurateur and customer and their experiences in managing reservation and making reservation.
2. To develop a web-based restaurant reservation system as a platform for restaurateur and customer to replace all the traditional methods of handling reservations and table booking, as well as eliminate the problems faced by restaurateur and customer.
3. To evaluate the web-based restaurant reservation system with test plan designed to assess the compliance of the system with project objective, requirements, and project solution.

## 1.5 Project Solution

In this project, a web-based restaurant reservation system would be developed that allows restaurant owner to manage and keep track all the reservations and pre-ordered foods made by the customers by searching and viewing the details of reservations so that restaurant owner could make a preparation for the reservations. Moreover, restaurant owner would be able to confirm or reject the customers' reservation and notification about the status of reservation would be sent to the customers. The restaurant reservation system would also allow restaurant owner to manage the menu in the system with the functions of viewing, updating, inserting and deleting the foods in the menu. Restaurant owner can update the food details such as food's photos, description, category, name and price.

This web-based system would require internet connection to access to the system in web browser with both mobile phone and computer. Users will need to register an account and login to the system to make a table reservation and pre-order foods for the reservation. Besides that, users are able to make changes on the reservation details but the changes made will be confirmed by restaurant owner. However, users are unable to make changes on pre-ordered foods that have been paid in the system.

## 1.6 Project Approach

### 1.6.1 Development Approach

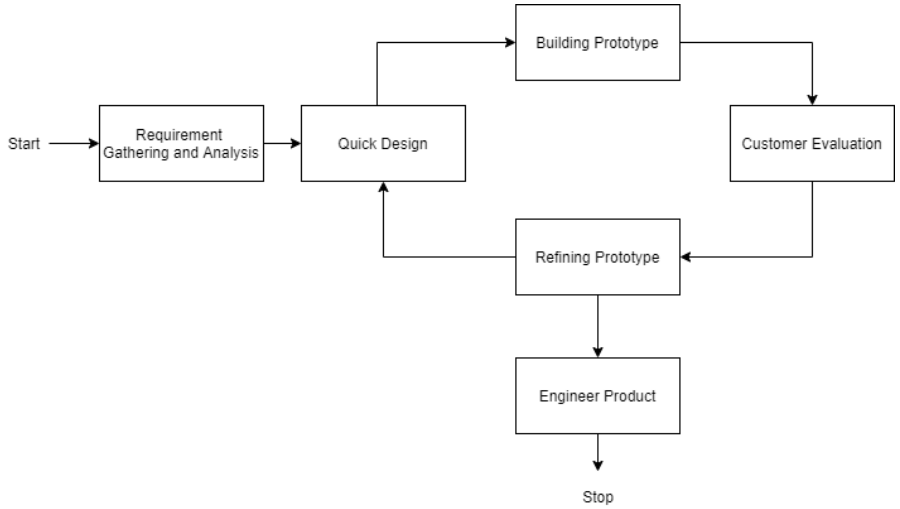



Figure 1-1: Prototype Model

Prototype model is used as the development approach for this project. In this methodology, a throwaway prototype is required to be built so that the desired user requirements can be easily identified and understood. Moreover, after the users interact with the prototype of the system developed based on the requirements that have been identified in the early stage, users will provide their desired requirements and feedbacks on what they want in their system. The prototype is refined and improved based on the new requirements and feedbacks provided by users and any shortcomings identified in previous prototype. Besides that, the process of refining prototype is repeated until the desired system is built as well as all the user requirements are met. In the end, the final system will be built and then deployed to production.

Requirement Gathering and Analysis

In Prototype model, detailed requirements for the system are identified in the early phase to have an idea of how the system is going to be built. Questionnaire and interview will be prepared for users to gather their requirements and expectations on their desired system. The main user is restaurant owner or staff who will view and manage the reservations made by their customers in the system. The customers will be the second users who will make reservation and pre-order foods in the system.

Quick Design

In this second phase, a quick design of the simple system is developed with the requirements gathered from users in the first phase. The purpose of this quick design is to allow users to have a visualization on the basic idea of the restaurant reservation system. Besides, this phase also helps in the next phase, which is building prototype.

Building Prototype

In this stage, a small-scaled version of the restaurant reservation system, prototype is built based on the preliminary design of the system. The purpose of the prototype is to let users to have a closely interaction with the prototype to understand the functionalities that are going to be built in the system and evaluate it.

Customer Evaluation

The developed prototype in previous phase will become a showcase for restaurant owner and staff to evaluate and review. After the evaluation, they will give their feedbacks and comments on the prototype, which is a valuable information to refine and improve the prototype as the feedbacks could be the requirements that are not met. The collected feedbacks are recorded and passed to the developer to make the improvement.

Refining Prototype

The refinement and improvement of prototype will be carried out in this phase based on the feedbacks and comments gathered from the first prototype. After refining the prototype, the prototype will then be evaluated by the users again. These processes are repeated until the user requirements are met and users accept the prototype. After that, the complete system can start to be developed.

Engineer Product

The finalized prototype the users satisfy with will be used to build the final version of the restaurant reservation system. The testing activities are also carried out before the complete system is released to production.

### 1.6.2 Research Method

The quantitative research was used as one of the research methods for this project. Questionnaires had been designed and distributed to the targeted users to collect the useful information. To increase the response rate of the survey, the questionnaires was distributed and posted on social media platforms like Facebook and WeChat. Two different questionnaires were prepared for restaurant owner and random survey participants (customers). The survey participants were selected randomly to avoid bias and prevent an unknowingly effect on the accuracy of the results. The sample size, also known as the number of completed responded the survey will be 30 so that the results are more promising and reliable.

The purpose of this research is to understand restaurant owner's view on reservation management and customer's view on making reservation with various type of methods. There would be a standard demographic question in both questionnaires, which would collect the fundamental personal information from survey participants such as age, gender and ethnicity. Then, the questionnaire for restaurant owners collected the information about their experiences and challenges on handling the reservations and other detailed information related to restaurant operations. Moreover, the survey participants' expectations on functionalities and features in restaurant reservation system were going to be collected. In the end of questionnaire, the opinions on the restaurant reservation system were collected as well.

Due to Covid-19 pandemic, the questionnaire was used as it was easier to be distributed through social media platforms and research could be conducted more safely. Other than those reasons, the results would be more accurate and reliable as the questionnaire could reach out to large number of people. Moreover, the close-ended questions were designed in questionnaire so that the analysis on the findings and results gathered from questionnaire could be conducted smoothly and efficiently.

## 1.7 Scope of the Project

### 1.7.1 Deliverables

This project will aim to develop a web-based online restaurant reservation system. The users are required to use web browser and internet connection to access this system. The end user for this project includes admin section (restaurant owner and staff) and customer section.

**Restaurant Owner and Staff:**

Restaurant owner or staff can use the system to view, search and confirm or rejects all the reservations made by customers. Moreover, restaurant owner can manage their menu by updating, inserting and removing food in their menu in the system for customers to view and pre-order the food. Other than that, restaurant owner can confirm or reject the reservation made by customers. The status of reservation is able to view in system and notification of reservation status changed will be sent to customers via email. Besides, the reporting tools feature such as guest frequency and most popular dish pre-ordered by customers will be available.

**Restaurant Customers:**

Customers can use the system to make reservation by selecting date and time available in the system. Customers can also view the restaurant's menu for pre-ordering the food after they make reservations. Notification of reservation status will be sent to customers via email to notify them whether the reservation is successful.

# CHAPTER 2

# LITERATURE REVIEW

## 2.1 Introduction

In this chapter, the study will be carried out on three existing similar web-based restaurant reservation system to conduct analysis on their main features and functionalities. Moreover, the study will be conducted on various type of system development methodology and web application development frameworks. After conducting the study, a suitable methodology and framework for this project will be chosen and adopted to restaurant reservation system development. These choices I made when selecting methodology and framework will be based on the programming knowledge and experience in developing a web-based system in order to achieve the project objective.

## 2.2 Existing Similar Web-Based Restaurant Reservation System

### 2.2.1 TABLEAPP: Online Restaurant Reservation Application in Malaysia (https://www.tableapp.com/)

TABLEAPP is an online restaurant reservation site available in Malaysia and Thailand. This reservation site is developed by a local company, Tableapp Sdn Bhd. The company puts all their focus and efforts in this TABLEAPP to deliver the best experience of making restaurant reservation for their clients such as diners. Besides this online reservation site, Tableapp company also developed a real time restaurant reservation mobile application to expand their customer base.

TABLEAPP is free to access by diners to make reservation no matter where or when. For free version of TABLEAPP, the main features include make reservation, place delivery or take-away order, restaurant searching and dining voucher purchase for reservation. Moreover, diners can pay for ELITE membership for either 3 months and 1 year to become TABLEAPP ELITE member to have a better dining experience such as redeem signature dishes at the Top restaurants in KL. For restaurateurs, they can request for a demo to try out, and then pay for using TABLEAPP if they think TABLEAPP useful for their restaurant businesses. The main features for restaurateurs

include reservation management, menu and dishes management and promotion management.

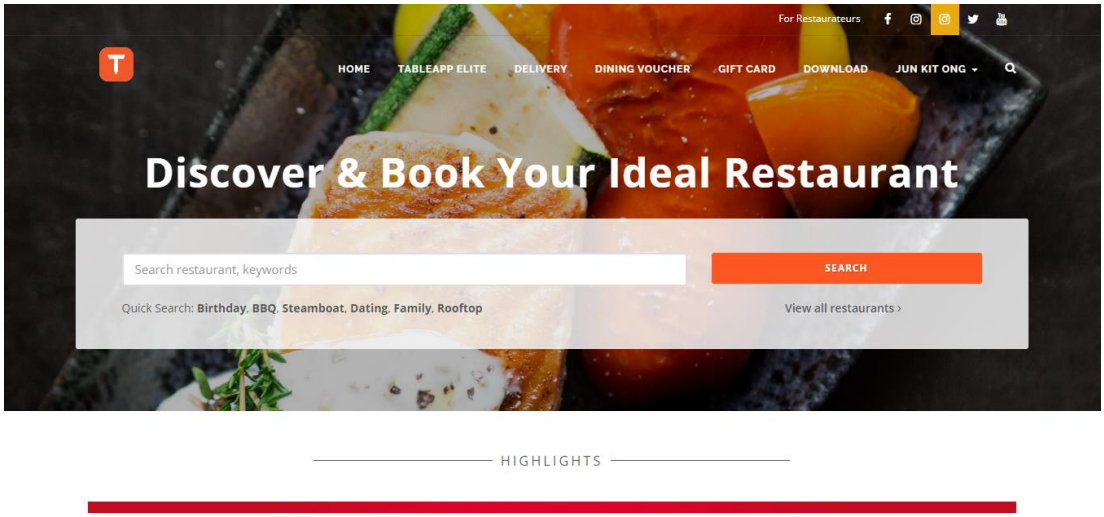



Figure 2-1: TABLEAPP Home Page (TABLEAPP, 2021).

In the homepage of TABLEAPP, diners are able to search the restaurant by entering the keyword or restaurant's name. There are the quick searches to click on to search the restaurant without entering anything. Moreover, diners are able to view all the restaurants immediately by clicking the "View all restaurants >" hyperlink.

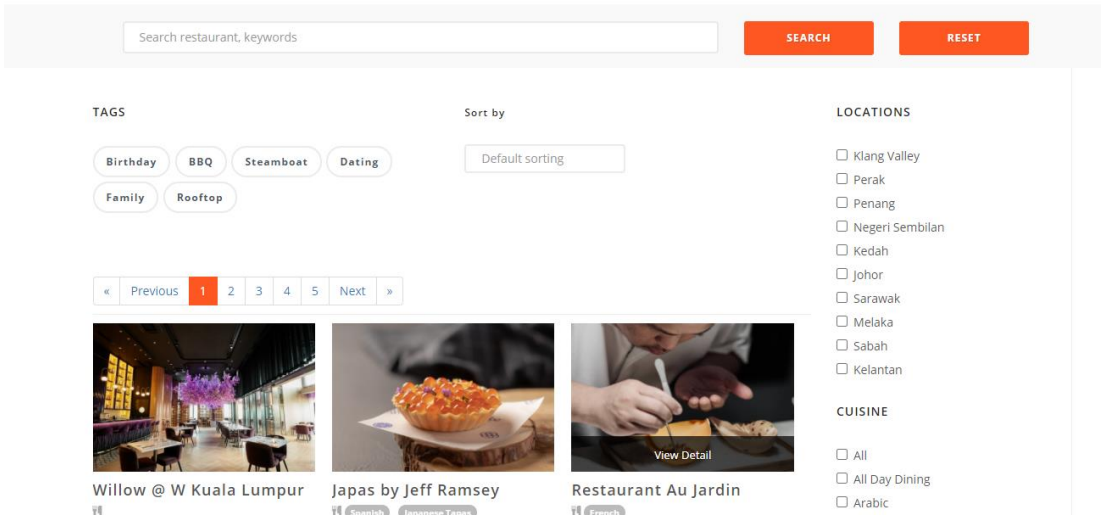



Figure 2-2: TABLEAPP Restaurant Listing Page by TABLEAPP, 2021.

After diners search the restaurant, diners are redirected to this restaurant listing page to view the search result (restaurants found). The diners can search the

restaurant with location, cuisine and tags (steamboat, BBQ, dating, etc.). Moreover, the search results are able to sort by alphabet, price and editor choice.

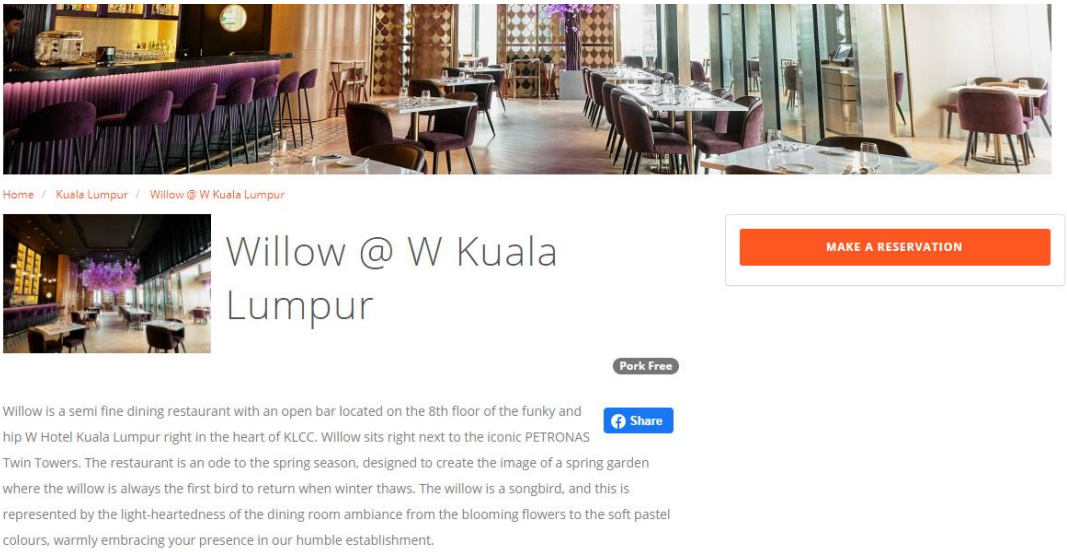



Figure 2-3: TABLEAPP Restaurant Detail Page (TABLEAPP, 2021).

After diners select a restaurant, they are redirected to the selected restaurant's web page to view the restaurant's detailed information. The information includes restaurant background, price range, operation hours, contact details, location and payment options. Different restaurants have their own different reservation policy for instance, the diners are required to pay the deposit of RM50 per person if group reservation of 8 persons or above is made and the deposit will be deducted from total bills. It seems like TABLEAPP has a feature for restaurateurs to set their own reservation policy and booking fee.

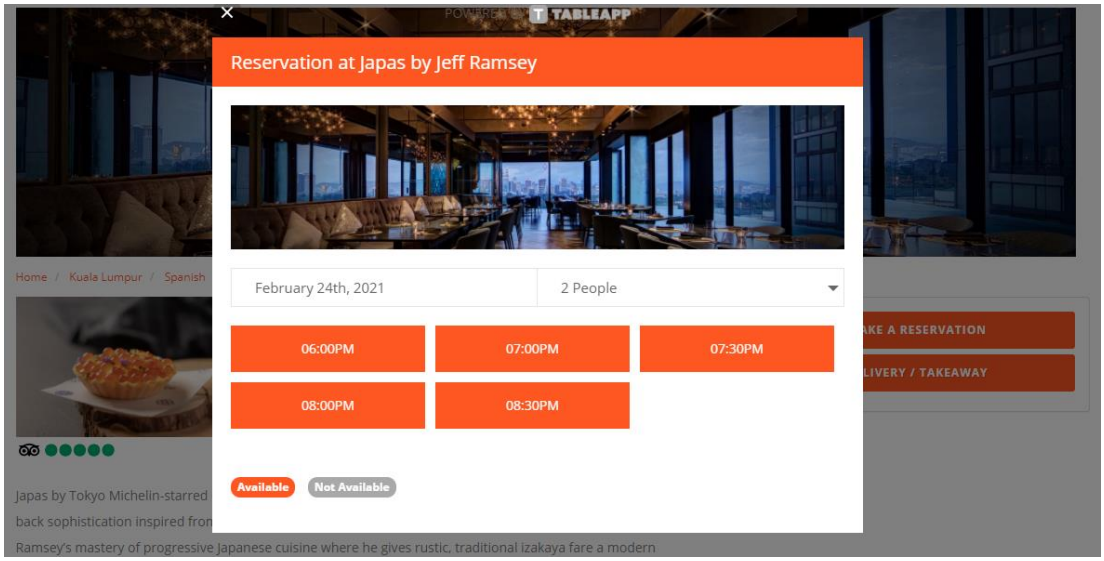



Figure 2-4: TABLEAPP Restaurant Detail Page: Date and Time Selection for Reservation (TABLEAPP, 2021).

The diners are able to make a reservation by clicking the "Make a Reservation" button. A small panel will pop out for diners to select number of persons, date and time for reservation. The diners are able to view the availability of date and time. After selecting the time, personal details are required to be filled in and besides that, the diners are able to fill in purpose of reservation as well as a remark to inform the restaurant if the diners have any food allergies or religious restrictions. After confirming the reservation, the diners are able to choose their payment options set by the restaurant if booking fees are required to be paid.

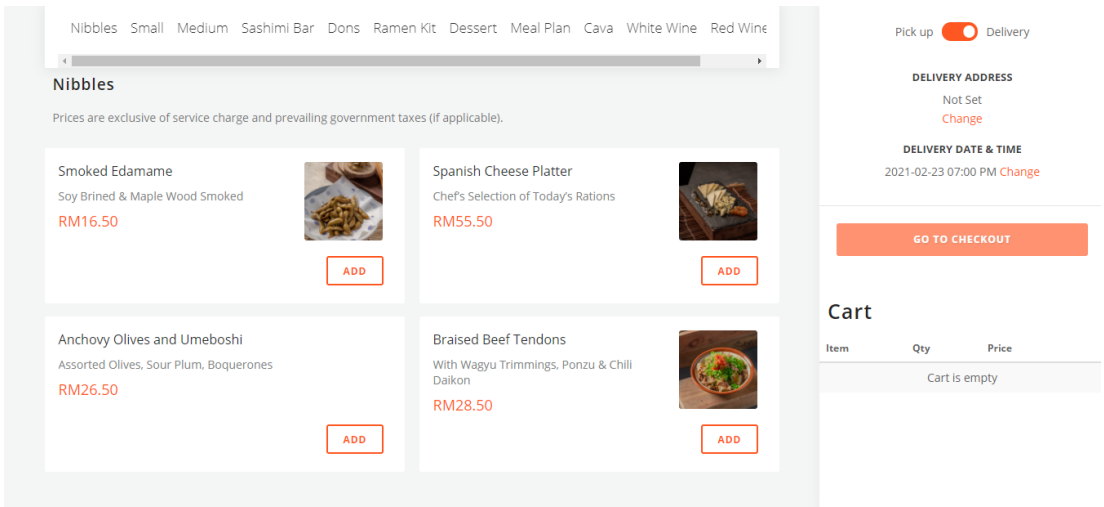



Figure 2-5: TABLEAPP Restaurant Menu for Delivery/Take-away

In TABLEAPP, take-away and delivery are available on some restaurant. For placing delivery and take-away order, diners are able to view the menu, add the dishes into the cart and then make payment. The diners are required to fill in the delivery date and time for both delivery and take-away, as well as delivery address for delivery. The dishes are well-categories, which means TABLEAPP allows restaurateurs to manage the menu by setting the dishes' price, description and category.

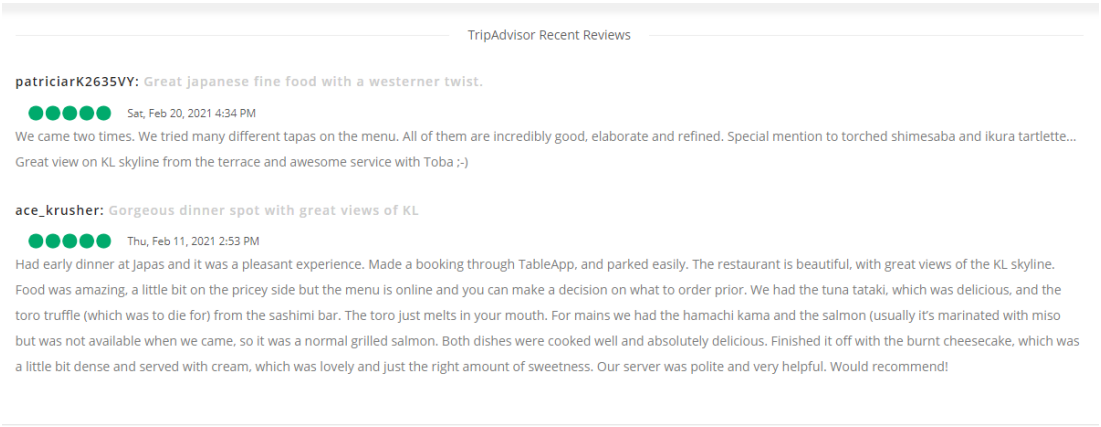



Figure 2-6: TABLEAPP Restaurant Reviews from TripAdvisor (TABLEAPP, 2021)

Moreover, TABLEAPP has integrated with TripAdvisor so that the diners are able to view the restaurant's recent reviews. TripAdvisor is a platform where travellers are able to read the reviews of travel location such as hotel, restaurant, travel destination and so on. In addition, diners are able to directly make reservation through TripAdvisor as well as restaurant's Facebook page as these social media platforms allow restaurateurs to reach out more quality diners and increase revenue.

### 2.2.2 OpenTable: Global Online Restaurant Reservation System (https://www.opentable.com/)

OpenTable is a restaurant reservation system developed by Booking Holdings Inc. in San Francisco back in 1998. OpenTable is available at international major cities such as Melbourne, Kuala Lumpur, Singapore, Osaka and so on. Besides OpenTable online reservation site, it is also available in mobile application which can allow diners to book a table conveniently with mobile phone. Since OpenTable is able to use widely in international major cities, it is convenient for travellers to make a reservation with OpenTable when traveling overseas.

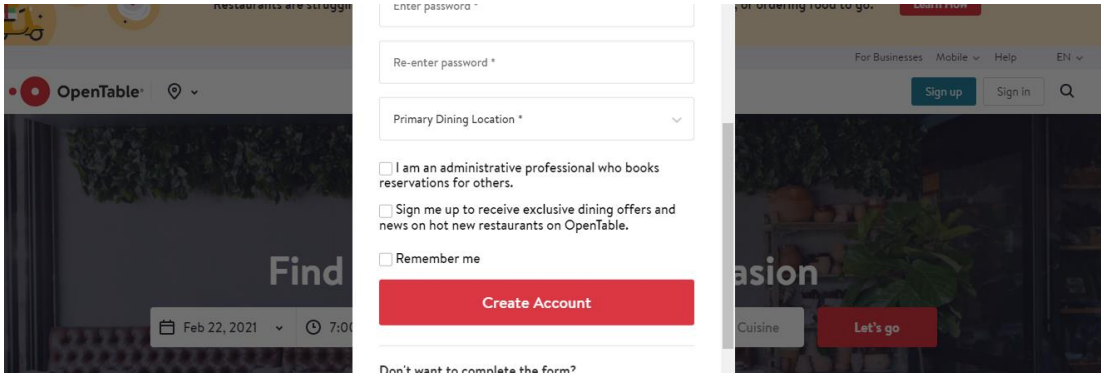



Figure 2-7: OpenTable - Account Sign Up (OpenTable, 2021)

There are many features available in OpenTable compared to TABLEAPP. OpenTable is slightly different compared to TABLEAPP when it comes to sign up an account and use OpenTable service. Diners can either create an account or directly login with Facebook or Google accounts. Moreover, since the OpenTable provides restaurant reservation service globally, diners are required to specify their primary dining location when signing up an account for displaying the restaurants nearby the location chosen to diners. Furthermore, diners are able to earn dining rewards with points by making reservation in OpenTable, but the rewards are only available in United States. Other than that, take-away and delivery are also available in OpenTable and there is a payment gateway for diners to make payment for take-away and delivery.

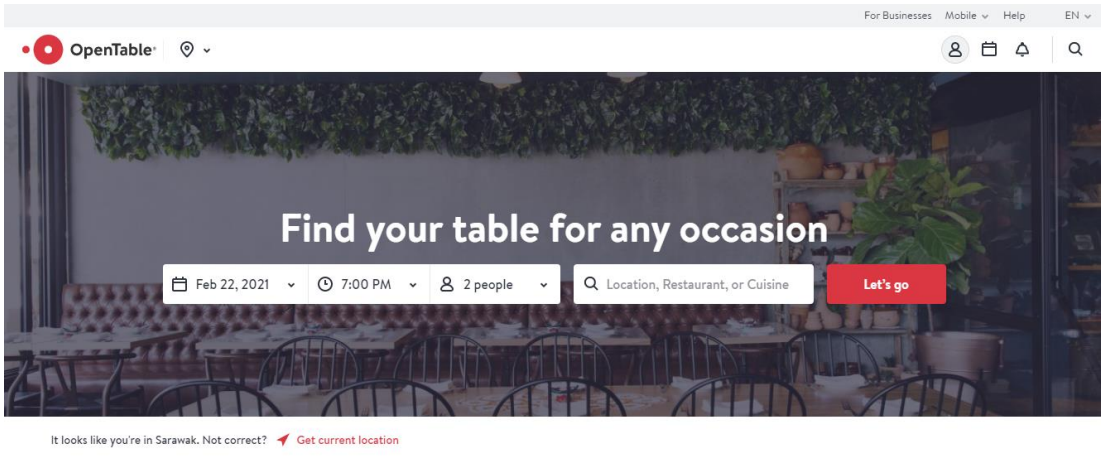



Figure 2-8: OpenTable Home Page (OpenTable, 2021)

In OpenTable home page, diners are able to search location, restaurant and cuisine in the searching text box to find the restaurant. Diners can directly select the number of persons, date and time in home page and then search the restaurant directly for the availability of reservations.

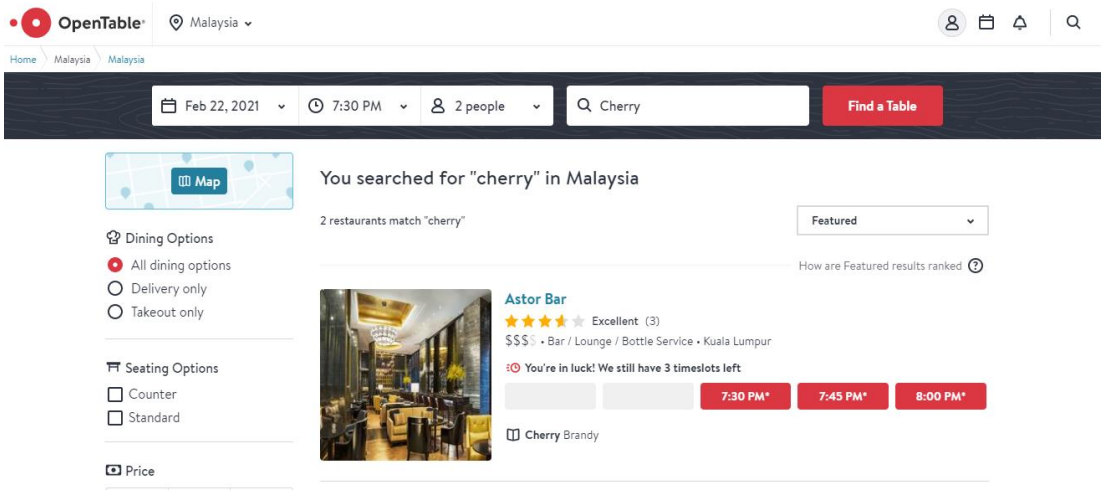



Figure 2-9: OpenTable Restaurant List (OpenTable, 2021)

The search results are not only the restaurants, the dishes can also be searched. The diners are allowed to filter the result with price range, seating options, location, cuisine, ratings and distance from home. By clicking the red button, diners will be redirected to another web page to confirm their reservation. To view the detailed information of the restaurant, diners can click on the restaurant name and they will be redirect to another page about the restaurant details.

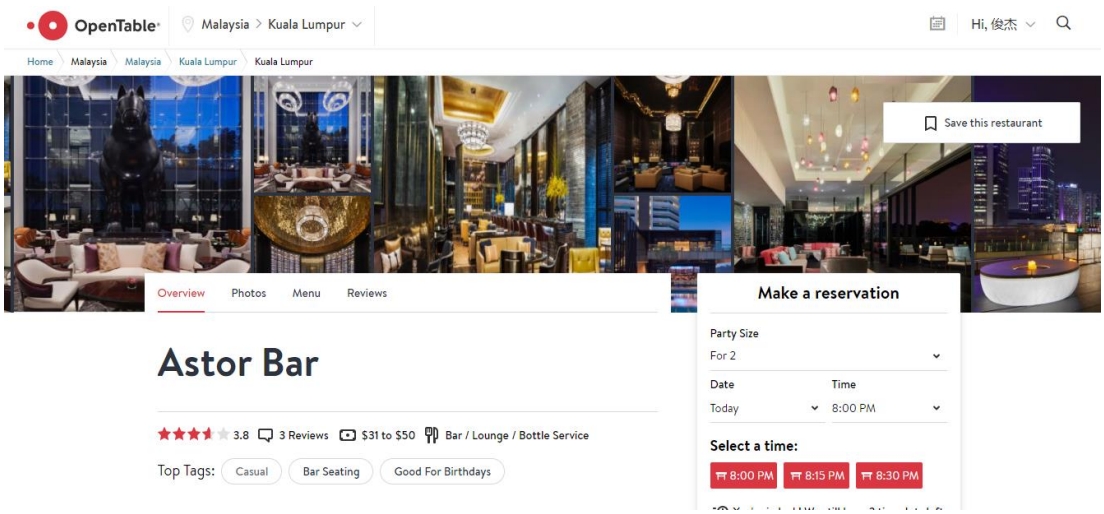



Figure 2-10:OpenTable - Restaurant Details Page (OpenTable, 2021)

In this page, diners are able to view the restaurant detailed information such as reviews, price range, cuisine type, seat availability, restaurant photo, menu and so on. Diners can also check for date and time available for making reservation.

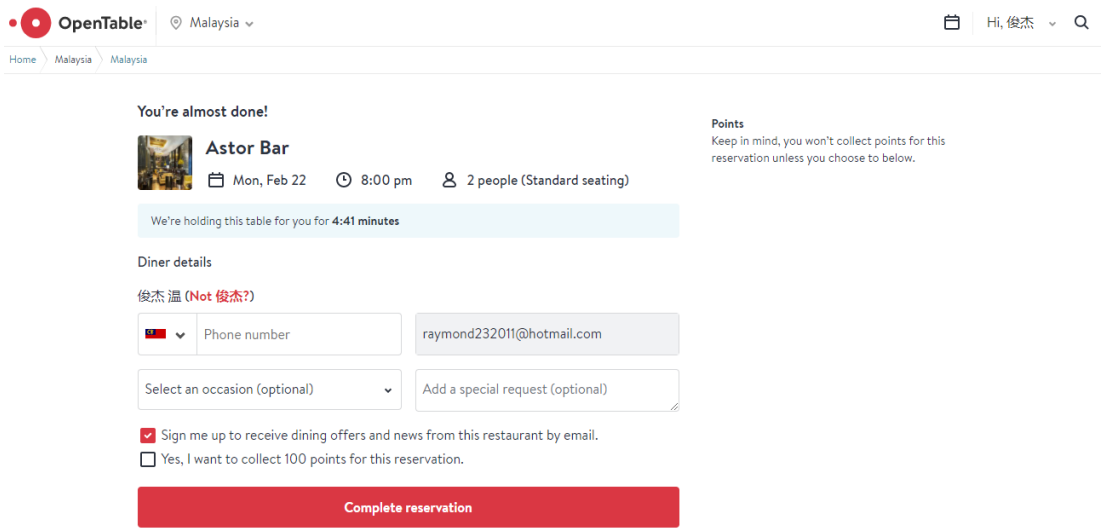



Figure 2-11: OpenTable - Complete Reservation (OpenTable, 2021)

In this page, diners are required to fill in their contact details to complete the reservation. Besides, the diners are able to add a special request to restaurant. The restaurant reservation process so far is almost the same as TABLEAPP. Furthermore, diners are able to set notification if the seats are available on specific date and time.

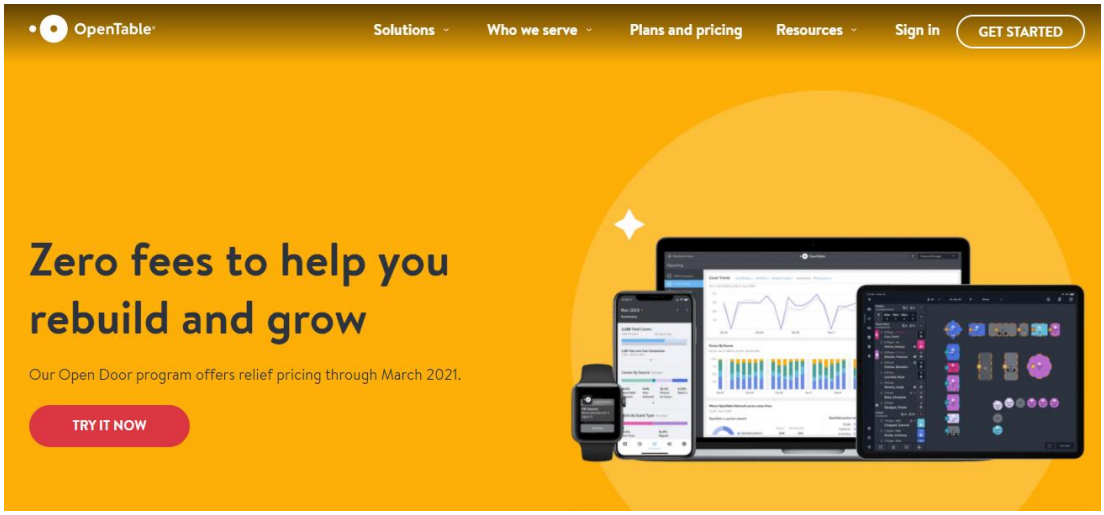



Figure 2-12: OpenTable – Digital Solutions for Restaurateurs

Restaurateurs are able to pay the subscription of using OpenTable product's features such as table management, review management and analysis, online and in-house waitlist, real-time inventory and so on. In table management, restaurateurs are able to customize the arrangement of table and seats graphically and table size similar as the dining room in their restaurants. Besides, restaurateurs are able to control the availability of every table in dining room by assigning the both reservations and walk-in diners to the tables selected and view the shift overview to the number of guests and party size on specific date and time. Moreover, the waitlist feature allows restaurateurs to inform walk-in guests about the availability of tables.

In additional, OpenTable also has a feature of powerful reporting for restaurateurs to optimize the shifts planning and maximize the table assignment process. For examples, the business reports include shift occupancy reports, reports from guests, guest frequency report, cover trend report, reservation list report, tum times analysis report and so on. These reports are able to be printed out and exported as Excel.

### 2.2.3 HungryGoWhere: Singapore Largest Online Restaurant Reservation and Review Site (https://www.hungrygowhere.com/)

HungryGoWhere is the largest online restaurant reservation and review site in Singapore and Malaysia. Back in 2004, HungryGoWhere was just a website that allow users to review and comment on the restaurant and dishes in Singapore. As the year goes by, many features are now available in HungryGoWhere such as food recipes, cooking video, take-away service and online reservation service. Besides that, HungryGoWhere is expanded its business to Malaysia market to reach out more customers and HungryGoWhere is now owned by SingTel company, Singapore telecommunication company.

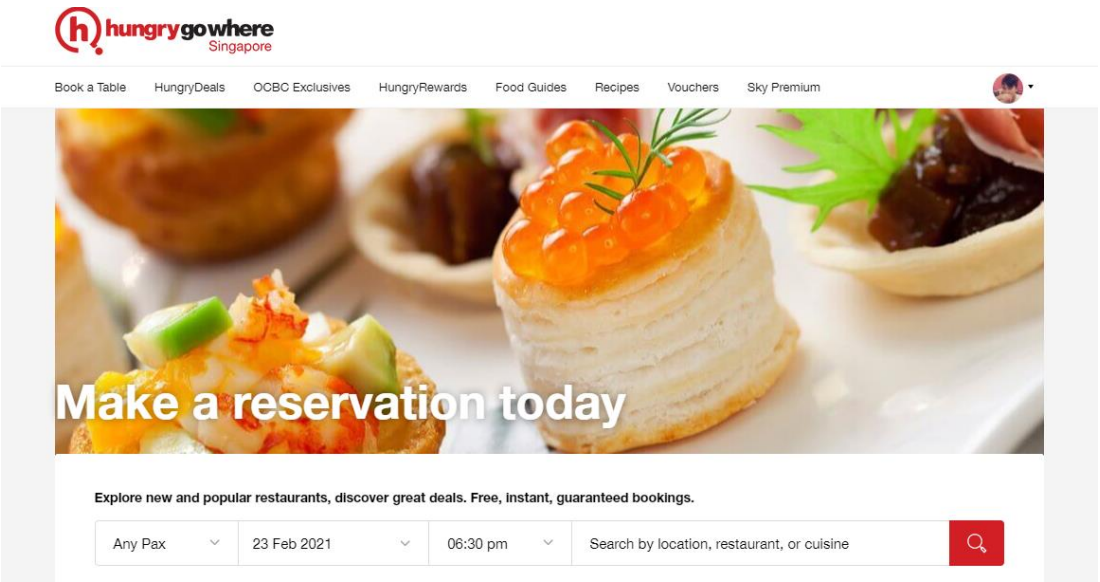



Figure 2-13: HungryGoWhere Singapore- Home Page (HungryGoWhere, 2021)

HungryGoWhere reservation website is divided into two websites for both Malaysia and Singapore so that the users are able to search the restaurants easier in specific country. In the home page of HungryGoWhere, diners are able to search and make reservation at the chosen restaurant online by filling number of persons, date and time and then check for the availability.

Moreover, the registered diners are able to redeem rewards from HungryGoWhere when they make a numerous time of complete reservation at any

restaurant with HungryGoWhere. The rewards include voucher, cash credits and discounts.

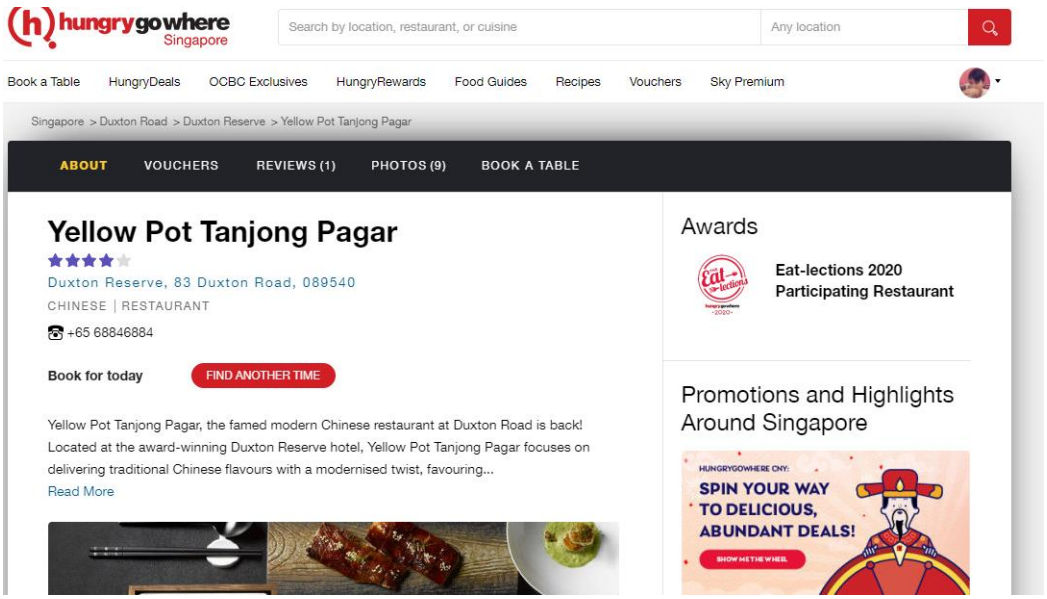



Figure 2-14: HungryGoWhere - Restaurant Detail Page (HungryGoWhere, 2021)

After selecting a restaurant, the detailed information about the restaurant such as contact information, address, cuisine and reviews will be displayed and viewed by diners. There are some different compared to TABLEAPP and OpenTable, which is that there is no price range in restaurant detail page. Other than that, some restaurants do not provide the menus for diners to view, and the menus provided by the restaurants are required to download instead of viewing in image or text.

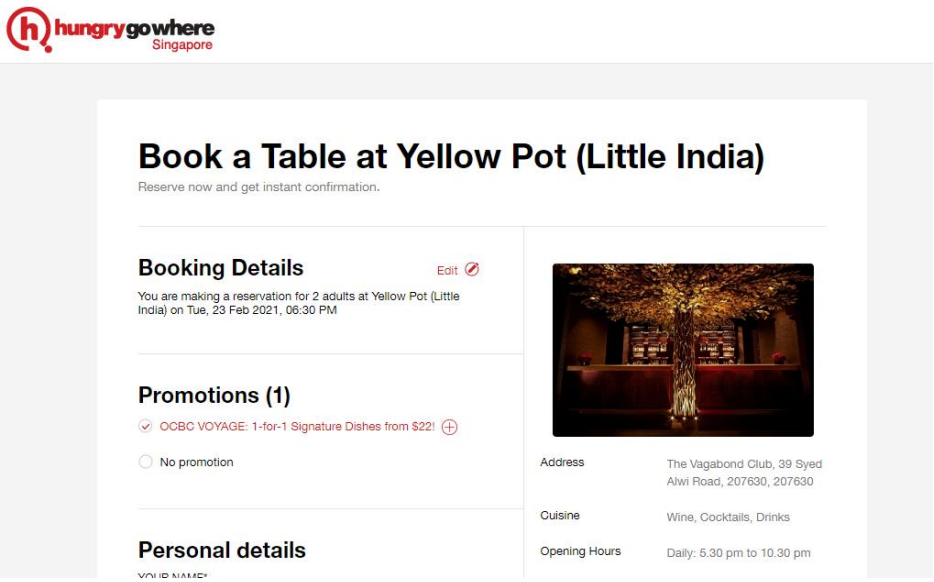



Figure 2-15: HungryGoWhere - Reservation Confirmation (HungryGoWhere, 2021)

In HungryGoWhere, the reservation making process is the same as TABLEAPP and OpenTable like filling in personal details and contact details. The special feature is that diners are able to use voucher and promotion available in HungryGoWhere. Other than voucher and promotion, the reservation is free of charge and confirmed immediately by the HungryGoWhere. It seems like there is no booking policy applied by the restaurants. Lastly, after clicking the confirmation of reservation button, the reservation is completed instantly and received by restaurateurs directly in HungryGoWhere.

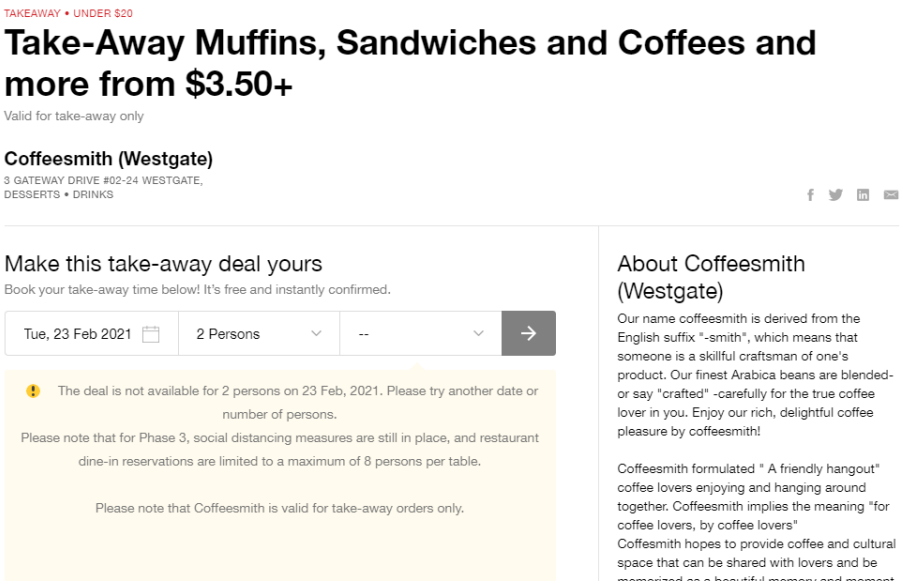



Figure 2-16: HungryGoWhere - Take-away Time Booking (HungryGoWhere, 2021)

In HungryGoWhere, there is a foods take-away feature that is slightly different from TABLEAPP and OpenTable. For some restaurants or hawker stalls, customers need to book a date and time for food take-away. After booking the time, restaurateurs will call the customers to confirm order and pay at the restaurant with cash. Customers can still view the menu in image form, which is not interactive.

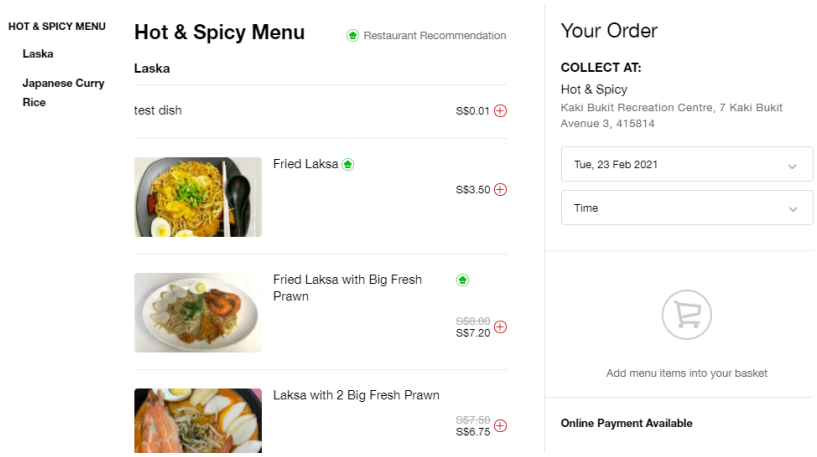



Figure 2-17: HungryGoWhere - Online Take-Away Service (HungryGoWhere, 2021)

For some high-class restaurants, online take-away service is available for customers to make a take-away order in HungryGoWhere. Customers are able to view the restaurant menu and add the dishes into the "basket". Then, customers are required to select date and time to collect the order before they proceed to check out and make an online payment via multiple payment option available in the restaurant.

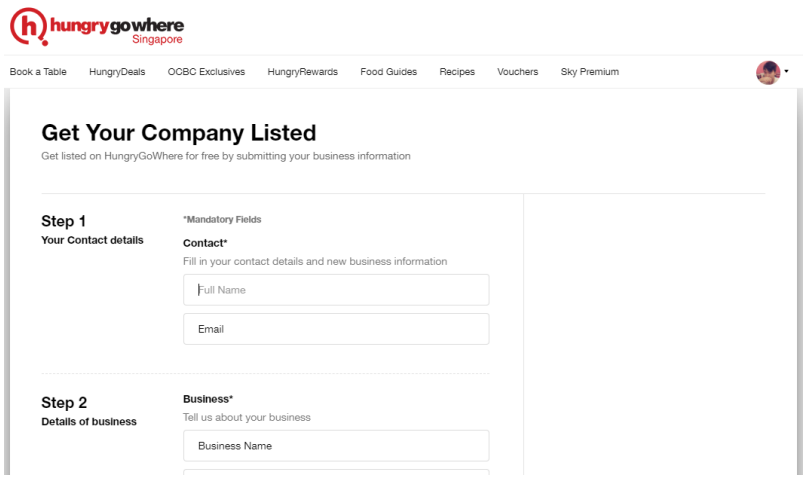



Figure 2-18: HungryGoWhere - Form for Getting Restaurant Listed on HungryGoWhere (HungryGoWhere, 2021)

The restaurateurs are able to get their restaurant business listed on HungryGoWhere for free by having an account and submitting their restaurant detailed information such as restaurant name, restaurant website and so on. The restaurateurs are required to pay for premium listing if they want to promote and highlight their restaurant business in HungryGoWhere.

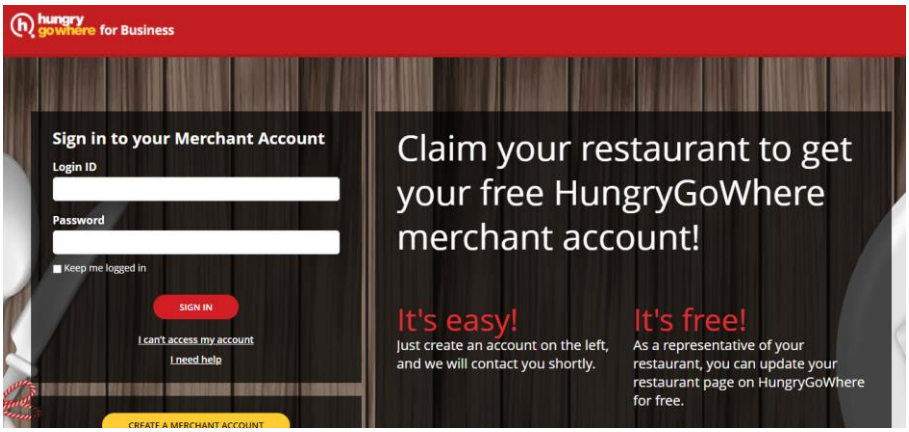



Figure 2-19: HungryGoWhere - Merchant Account (HungryGoWhere, 2021)

There is a take-away deals feature in HungryGoWhere where customers are able to book their take-away time online at restaurant selected. To access this feature, restaurateurs are required to create a merchant account for free so that they will have their own listing page in HungryGoWhere platform as Figure 2-14. Once restaurateurs have their own listing page, they are able to manage their menus, promotions, customer reviews, and view page analytic.

### 2.2.4 Comparison between Similar Web-based Restaurant Reservation System

Table 2-1: Comparison of characteristics between similar web-based restaurant reservation system

| | TABLEAPP | OpenTable | HungryGoWhere |
|---|---|---|---|
| URL | https://www.tableapp.com/ | https://www.opentable.com/ | https://www.hungrygowhere.com/ |
| Country Available | Malaysia | Global | Singapore, Malaysia |
| Table Booking | Available | Available | Available |
| Reservation Management | Available | Available | Available |
| Restaurant Menu Management | Available | Available | Available (take-away service only) |
| Pick-up Service | Available | Available | Available |
| Delivery Service | Available | Available | Unavailable |
| Reservation Report | Available (Simple reporting) | Available | Unavailable |
| Suspension of Account If No-Show | Unavailable | Available | Available |
| Reservation Fee Payment | Compulsory | Compulsory | Not Compulsory |
| User Privacy Protection | Available | Available | Available |

After studying and using the similar online restaurant reservation system, we found out that they have same essential features of booking tables and reservation management but different booking policy and process. For instances, most of the restaurants in TABLEAPP and OpenTable have a booking policy emphasizing that reservation fee is required to pay depends on the number of persons while HungryGoWhere does not have to pay any reservation fee for table booking. Other

than that, OpenTable and HungryGoWhere have a right to suspend guests' account if the guests do not show up for the reservation for several times after guests agree to terms and conditions applied in OpenTable and HungryGoWhere. Besides, user account and personal information is protected in all 3 systems by one-time password (OTP) that will send to user's mobile phone for identity authentication.

TABLEAPP and OpenTable provide a feature for restaurateurs to create and manage their own restaurant menu content to the system while for HungryGoWhere, it only available for take-away service for guests to make take-away order. In HungryGoWhere, restaurateurs are only able to take a photo or scan their menu, and then upload them to their restaurant profile in image format or .pdf format for guests to view. Self-pickup service is available for some restaurants in all the system while delivery service is not available in HungryGoWhere.

The reporting feature is available for TABLEAPP and OpenTable except for HungryGoWhere. TABLEAPP provides some simple reporting feature such as customers preference of dining, while OpenTable provides numerous types of reporting for restaurateurs such as shift occupancy, cover trends, guest frequency, and so on.

### 2.2.5 Limitation of Existing Restaurant Reservation System

**TABLEAPP:**

The restaurant rating and reviews in TABLEAPP are retrieved from TripAdvisor where rating score is measured with one star (very bad) until five stars (very good). Due to the marketing strategy implemented for all the restaurants, only five stars reviews are retrieved from TripAdvisor in TABLEAPP to attract more guests to make reservation. Therefore, guests are unable to view the bad comments and reviews about the restaurant.

**OpenTable:**

In OpenTable, menu section in some restaurant page has a link that redirect users to restaurant official website to view the menu instead of in OpenTable. Besides, the items in restaurant menu are not attached with food photo, which is important to provide guests how the dishes look like. Other than that, the restaurant menu is packed with texts such as dish's name, description and price without food photo.

**HungryGoWhere:**

The payment gateway is only available for take-away service in HungryGoWhere. Besides, the whole restaurant menu in HungryGoWhere is either image format or .pdf format while only the restaurants which subscribe the take-away service feature in HungryGoWhere are able to manage and update the restaurant menu for take-away service instead of just a photo of menu taken physically.

### 2.2.6 Features to be Included in Project

Table 2-2: List of features included in the project

| **Features** | **Factor** |
|---|---|
| Table Booking | Ease the table booking process |
| Reservation Management | To allow restaurateurs manage and track reservations made by guests |
| Restaurant Menu Management | To allow restaurateurs update and manage content of restaurant menu |
| Reservation Status Email Notification | To send email notification to customer about the reservation status after confirmed or rejected. |
| Exporting Report Feature | To allow restaurateurs to export report and reservation list to Excel or PDF file. |
| Reporting Feature | To allow restaurateurs to view the report such as guest frequency and most pre-ordered dish. |
| Food Pre-order | To allow guests to pre-order food for their reservation |
| User Privacy Protection | To protect user's personal information from hacking |

After analysing and comparing the existing restaurant reservation system available on internet, I decided to include some features and functionalities in this project. The functions of table booking and reservation management are the essential features in the reservation system. The reservation will be confirmed or rejected by admin, and then an email notification will be sent to customers to notify their reservation status.

Restaurant menu feature will be included for restaurateurs to manage and update the restaurant menu content in restaurant reservation system as well as for customers to view the restaurant menu. The content of restaurant menu will include photo of food, price, food name, food category and food description.

Moreover, the reporting feature will be included into this project to allow restaurateurs to view the guest frequency and most popular dish pre-ordered by guest. Furthermore, users are required to sign up an account with username and password as

customers before making reservation so that restaurateurs are able to make contact with customers

Besides that, food pre-order feature as mentioned in project scope will be developed to allow customers to pre-order foods for their reservation so that they can get their food as fast as possible to overcome long waiting time after they arrive at restaurant.

## 2.3 Software Development Methodology

Software development methodology remains critical in every software project to achieve the project objectives. It can be time-consuming to make a decision on selecting a right methodology as we need to consider many factors such as type of project, project objectives, resource and so on. To choose the best development methodology that suits this project, study and analysis on several methodologies are required to be conducted by comparing advantages and disadvantages of different methodologies.

### 2.3.1 Waterfall Model

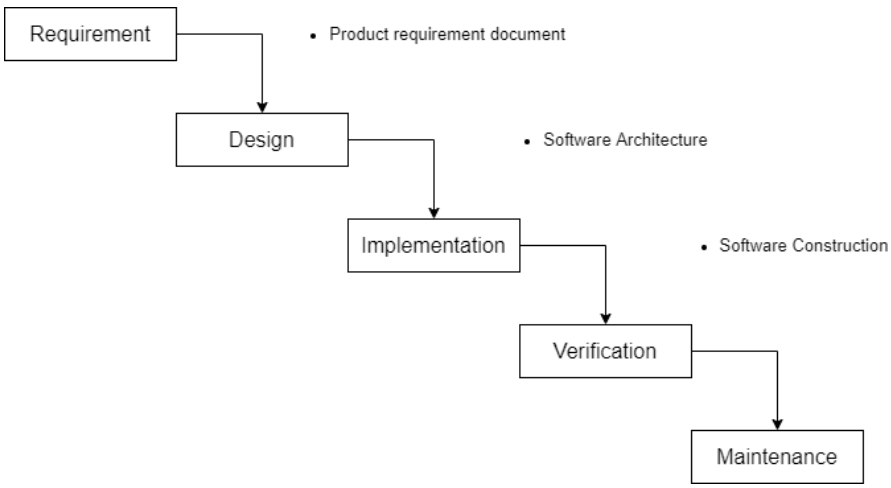



Figure 2-20: Waterfall Model

Waterfall Model is the earliest Software Development Life Cycle (SDLC) model that is widely used in software industry because this model is easy to be implemented in software project and easy to understand the concept of Waterfall Model. In Waterfall Model, the sequential phases cannot be skipped and overlapped and must complete each phase linearly and accordingly before moving to next phase.

#### 2.3.1.1 Phases of Waterfall Model

There are five main phases in Waterfall Model. The product and outcome in each phase will contribute to next phase.

**Requirement**

The first phase in every Software Development Life Cycle model is about capturing, eliciting, and analysing the requirements. After requirement analysis and elicitation, the requirements are documented into Software Requirement Specification (SRS) to define what needs to be achieved in the project.

**Design**

In this phase, the planning on software tools, framework, programming language and database schema and other technical requirements is conducted and prepared for designing the system. The system design will be based on the Software Requirement Specification (SRS) which is prepared in previous phase to outline the system requirements to fulfil the requirements identified in previous phase.

**Implementation**

Developers and programmers will start writing source code in this phase to convert all the requirements in Software Requirement Specification (SRS) and system design outlined in previous phase into source code.

**Verification**

The software tester will conduct the testing activities with different software testing methodologies that suits the project after the implementation phase is completed. The aim of this phase is to ensure all the requirements in Software Requirement Specification is fulfilled and no fatal bugs, defects and failures existing in the source code before releasing the system.

**Maintenance**

After the verification phase, the system will be deployed to production, and support and maintenance on the system after deployment is required to ensure the system functioning in client environment, fix bugs, and enhance the system to fulfil the changes made by clients.

#### 2.3.1.2 Advantages of Waterfall Model

- Each phase, goals and milestones are well-defined and well-understand. Therefore, it simplifies the process of documentation, assigning task and allocating resource for the project.
- Since the Waterfall Model emphasizes on sequential progression, the quality assurance test is forced to be conducted in each phase before proceeding to next phase.
- Development team can clearly understand what need to achieve and develop since the requirements are clearly defined in document in early phase.

#### 2.3.1.3 Disadvantages of Waterfall Model

- Testing activities is not done earlier as it may cause a lot of bugs and design issues accumulated throughout the whole development life cycle.
- The strictly ongoing development phase results in the lack of involving stakeholders' valuable feedbacks and comments on system which is important to be included to meet their requirements.
- Waterfall Model is not suitable for complex and large-scale project.
- The overhead for documentation of the project may be high, which means developers might be spending too much time on documentation.

### 2.3.2 Agile Model

Agile Model is an incremental and iterative model which decomposes the project into smaller incremental parts. Each incremental part is considered as an iteration or a time frame. The decomposition of project offers numerous advantages to project development as the smaller parts of project simplify the project management and development process and clearly define the scope of each incremental parts. After each iteration are completed, they will be tested, delivered and evaluated by clients as well as development team themselves to meet client satisfaction.

#### 2.3.2.1 Phases of Agile Model

The process flow of each iteration in Agile Model is almost similar to Waterfall Model.

**Requirement**

In the first phase, the core features and requirements are listed and documented based on client feedbacks. Initially, non-crucial features are not recommended to be defined first until the client has reviewed the core features, which is time-saving without working on putting other non-crucial features in document.

For the next iteration, the core features will be evaluated by clients and changes will be made to improve the core features.

**Design**

After requirements and features are defined, development team will plan how to build the product to achieve all the requirements and features defined in previous phase. The planning includes the software tools, UI design and software architecture that are suitable for the project design.

For the next iteration, development team will make refinement on the design and features of the project to fulfil the other requirement made by clients in next iteration.

**Development and Coding**

In this phase, development team starts to write code to build the product based on the requirements documented in the first phase.

**Integration and Testing**

The testing activities are conducted to ensure the requirements are met and source code is clean. The testing activities include user acceptance testing (UAT), integration testing, system testing, functionality testing and other series of test to make sure the product is bug-free and does not contain any defects and failures.

For the further iteration, more testing activities will be conducted as more requirements and changes might be coming from clients.

**Implementation and Deployment**

After testing activities are completed, the demo or complete product is ready to deploy to clients

For the further iteration, they will be an update and new features on the product requested by clients as well as bugs required to be resolved.

**Review**

Clients will provide feedback or request new features and changes for the product. Other than that, development team will also review the product and problem encountered during the entire development life cycle, and then come out the solution and ideas for them.

After all these reviews, feedbacks and new requests are gathered, the whole development life cycle will either repeat once again with new iteration or proceed to next stage of Agile Model.

#### 2.3.2.2 Advantage of Agile Model

- Client satisfaction is met as the functional product with working core features is able to delivered to client
- Development team is able to experiment the ideas during development process to enhance the product.
- As involvement of clients and stakeholder in project, immediate feedbacks from them are valuable to refine and enhance the product as fast as possible to meet their expectation.

#### 2.3.2.3 Disadvantage of Agile Model

- Documentation, overall system design and architecture, as well as progress measurement is lacking in Agile Model.
- This model is not suitable for junior developers or programmers as well as small size of project.
- The estimation of efforts, budget, resources and others is difficult as the expected results of project is unpredictable.

### 2.3.3 Prototyping Model

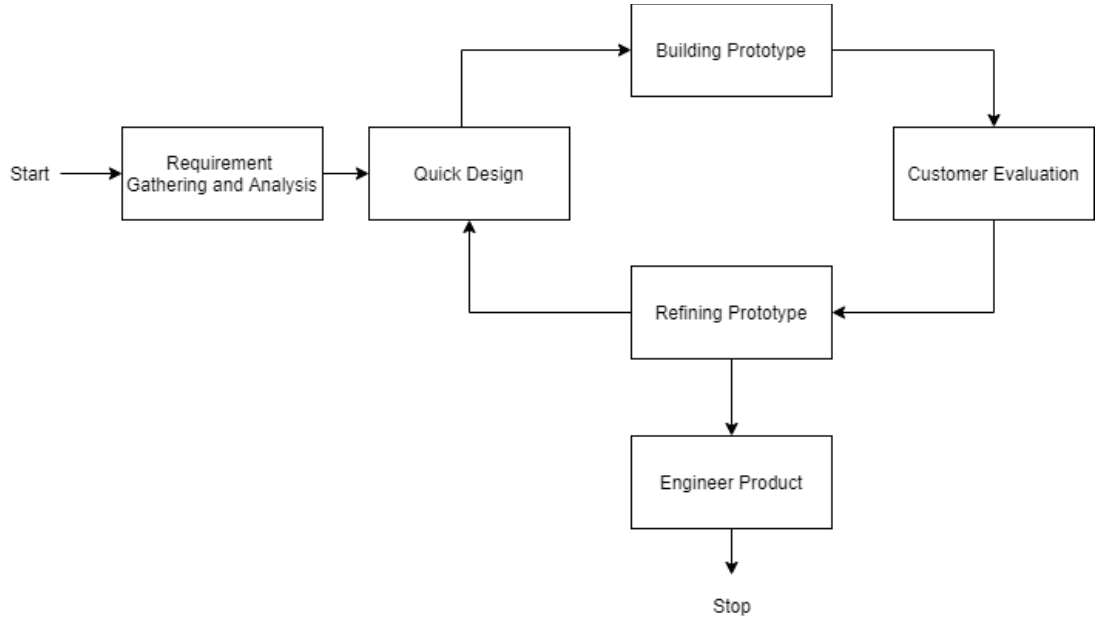



Figure 2-11: Prototyping Model

Prototyping Model is an approach used in software development to build a software product by building a prototype and refining prototype after evaluation by clients. The development process cycles from quick design phase to refining prototype phase until the clients is satisfied with the product and all requirements are met.

According to Nacheva (2017), prototype allows development team to explore usability, usefulness and acceptability of the project to achieve the project goals and meet the client satisfaction. For example, a throwaway prototype is built for better understanding the desired requirements and expectation from clients after they interact with prototype. After clients interact with prototype, their feedbacks are valuable to be collected to make improvement and refinement on prototype.

#### 2.3.3.1 Phases of Prototyping Model

**Requirement Gathering and Analysis**

In the first phase, detailed requirements for the system are identified in the early phase to have an idea of how the system is going to be built. Requirements can be gathered through many different methods such as having appointment, interview and interaction with clients.

**Quick Design**

In this second phase, a quick design of the system is developed based on the requirements gathered from users in the first phase. The purpose of this quick design is to allow users to have a visualization on the basic idea of how the product will look like.

**Building Prototype**

In this stage, a small-scaled version of the system, prototype is built based on the preliminary design of the system in previous phase. The purpose of the prototype is to let users to have a closely interaction with the prototype to understand the functionalities that are going to be built in the system.

**Customer Evaluation**

The developed prototype in previous phase will become a showcase for clients or selected users to evaluate and review. After the evaluation, they will give their feedbacks and comments on the prototype such as strength, limitation and missing requirements, which is a valuable information to refine and improve the prototype as the feedbacks could be the requirements that are not met. The collected feedbacks are recorded and passed to the developer to refine the prototype in next phase.

**Refining Prototype**

The refinement and improvement of prototype will be carried out in this phase based on the feedbacks and comments gathered from the first prototype. After refining the prototype, the prototype will then be evaluated by the users again. These processes are repeated until the user requirements are met and users accept the prototype. After that, the complete system can start to be developed.

**Engineer Product**

The finalized prototype the users satisfy with will be used to build the final version of the product. The testing activities are also carried out before the complete system is released to production.

#### 2.3.3.2 Advantage of Prototyping Model

- Clients are actively involved in project development by interacting and testing the prototype early to give instant feedbacks and comments on it, which are valuable for improving the finalised product.
- Involvement of clients allow missing features, errors, defects, and failures to be found earlier during development process
- Prototyping model is not a complex approach therefore it does not require any expert who specializes in this model.
- Usability of prototype is high for building the final-version of product.

#### 2.3.3.3 Disadvantage of Prototyping Model

- Prototype model is not suitable for project with limited budget and time.
- The excessive changes requested by clients may burden development team and cause poor quality of documentation.
- Excessive changes in requirements may expand the project scope too far from the original project scope and the initial plan.

### 2.3.4 Comparison between Software Development Methodologies

Table 2-3: Comparison of Features between Methodologies

| | **Waterfall** | **Agile** | **Prototyping** |
|---|---|---|---|
| Requirement Specification | During the first phase, no changes | Often change after review phase | Often change after client evaluation |
| Expert knowledge, experience, and skill | Required | Required | Not Required |
| Documentation | High | Low | Low |
| Suitable Project Size | Large | Large | Small to medium |
| Risk Analysis | Emphasize | Moderate | Not Emphasize |
| Flexibility to Change | Low | High | High |
| User Involvement | Not Frequent | Frequent | Frequent |
| Project Cost | Not Expensive | Expensive | Expensive |

In conclusion, a single methodology will be used in this project as the project size is small. Prototyping Model is chosen to be implemented in this project. Prototyping Model is effective in analysing and designing an online system (Madhukar Salve et al., 2018). Besides, it does not require any expertise when using this methodology. Moreover, Nacheva (2017) claims that prototyping approach is useful in developing user interface of different applications as it helps in exploring the usability, usefulness and acceptability of the project. Other than that, clients and stakeholder are involved in the development lifecycle frequently, and thus it ensures the success of this project by fulfilling all the requirements from them.

## 2.4 Web Application Frameworks and Tools

There are several types of frameworks in recent market for developing web application system. Laravel framework and Bootstrap framework will be compared and analysed their advantages and disadvantages for the fitness of this project.

### 2.4.1 Laravel

Laravel is a well-known PHP web application framework that widely used in web application company and developer. Laravel framework is following the architecture pattern so called model-view-controller (MVC) structure that separate into three layers which is client, application, and database. Moreover, Laravel is a free open-source framework with long term support (LTS) by large community. Besides that, there are many useful features for web application development to simplify the common tasks in web application project. The examples of feature in Laravel are eloquent object relational mapping (ORM), query builder, authentication and so on. Thus, Laravel provides numerous powerful tools and features web application developers needed to build web application and website.

#### 2.4.1.1 Advantages of Laravel

- The authentication feature in Laravel simplifies the implementation the authentication and authorization feature in a web project.
- Integration of automation testing and unit testing in Laravel has saved developer time to conduct testing the web application built with Laravel framework.
- A built-in error and exception handling in Laravel project brings convenience to web developer.
- Laravel framework is supported, maintained and updated by large community.

#### 2.4.1.2 Disadvantages of Laravel

- There are many tools required to spend some time to learn such as Blade templating, Composer, Bower and others.

- Laravel does not have built-in support function because Laravel framework is quite new in the market.
- The development time might be slower compared to others PHP framework.

### 2.4.2 Bootstrap

Bootstrap is a well-known CSS front-end framework, which is complete free to use for development front-end of web application and website. Befekadu Mezgebu Temere (2017) explains that front-end framework simplifies the user interface design process with templates written with HTML, CSS, JavaScript and other web programming languages. The popularity of Bootstrap framework is very high compared to other front-end framework such as Foundation. Due to its popularity, Bootstrap framework is supported and maintained by large community, and there are many resources available online to learn how to use Bootstrap.

#### 2.4.2.1 Advantages of Bootstrap

- It supports most of the modern browsers such as Internet Explorer, Google Chrome, Safari and so on.
- It does not require any expertise knowledge, just need a basic web programming knowledge such as HTML, JavaScript and CSS.
- It is time-saving when designing the user interface.
- A large community support.
- Free templates and plugins are available online and many people contribute them for free.

#### 2.4.2.2 Disadvantages of Bootstrap

- Lack of creativeness because every website and web application available online look the same with Bootstrap framework
- Some files size in Bootstrap framework is too large to be loaded.

### 2.4.3 Verdict

There are many critical evaluation criteria required to consider when selecting framework such as ecosystem of the framework itself, features of framework, tools available in framework and enterprise needs (Satrom, 2018). After comparing and analysing Laravel framework and Bootstrap framework, Bootstrap framework will be chosen in this project. There are several reasons to choose Bootstrap framework over Laravel framework. As the advantages mentioned, it does not require any expertise knowledge to master this framework since it can be used with basic web programming languages such as HTML, JavaScript, and CSS. Other than that, there are many user interface components as well as JavaScript plugins support available in Bootstrap framework, which is helpful in this project. According to study of Bootstrap conducted by Befekadu Mezgebu Temere (2017), web developers are able to get more support, resource, reference and free templates available online such as Stack Overflow due to its popularity. With the help of these resources available in community, the development of this project can be completed efficiently.

# CHAPTER 3

# METHODOLOGY AND WORK PLAN

## 3.1 Introduction

In this chapter, each phase in prototype methodology implemented in this project is explained. The prototype methodology consists of four phases such as requirement gathering and analysis, quick design, building prototype, customer evaluation and engineer product. There will be three iterations which include quick design, building prototype, customer evaluation and refining prototype in each iteration, and after the final iteration is completed, the iteration ends and proceeds to final phase, engineer product.

## 3.2 Prototype Methodology

### 3.2.1 Requirement Gathering and Analysis

In the first phase, the requirements were collected from diners and restaurateurs. The requirements gathered were documented and analysed. Other than that, literature review on existing online restaurant reservation system was also conducted to gather more requirements for this project.

#### 3.2.1.1 Quantitative Methodology – Questionnaire

Questionnaire was designed and distributed to 20 random respondents who can act as diners and 10 respondents who have experience working in restaurant to gather useful information as well as their opinion on the online restaurant reservation system. The questionnaire has total 11 closed-ended questions, which consist of 3 demographic questions, 4 questions for diners or restaurant customers, and 4 questions for who work in restaurant.

#### 3.2.1.2 Literature Review

Literature review was conducted to broaden and gain more knowledge on restaurant reservation topic. Three similar online restaurant reservation systems such as TABLEAPP, OpenTable, and HungryGoWhere were analysed and compared to study their distinct features and differences in terms of features and functionalities, which is

useful in understanding on what essential things restaurant reservation system must have.

Moreover, literature review also included the study on three different software development methodologies which are Waterfall Model, Agile Model, and Prototype Model. The aim of study them is to find out the methodology that suits this project by comparing and analysing their characteristics, advantage, and disadvantages.

Furthermore, two web application frameworks were studied in Literature Review. The frameworks studied include Laravel, PHP framework and Bootstrap, CSS framework. The aim of study the frameworks is to choose the best frameworks that suits this project by identifying and comparing their advantages and disadvantages based on the project context and my programming knowledge.

### 3.2.2 Quick Design

A quick design of the simple system was developed with the functional and non-functional requirements gathered in the requirement gathering phase. The outcome of quick design will help in building the low-fidelity prototype to provide visualization of idea about the restaurant reservation system as well as allow testing activities to be conducted on the essential functionality in reservation system. The low-fidelity prototype is shown in Appendix C.

### 3.2.3 Iteration

There were three iterations in this project and four phases required to go through in each iteration. The phases include quick design, building prototype, customer evaluation as well as refining prototype. The new features were added in refining prototype phase in each iteration.

#### 3.2.3.1 Iteration 1

The user interface, web pages of restaurant reservation system were designed and developed in the first iteration. The web page includes the home page, login page, table booking page, reservation listing page and so on. The navigation between the web pages was also designed in the prototype to allow users to understand the navigation flow between the web pages.

1. Quick Design

   The web pages design for restaurant reservation system were drawn in paper along with the navigation between the web pages.

2. Building Prototype

   The user interfaces of web pages for restaurant reservation system were built by following the design of web pages drawn in previous phase. Bootstrap CSS framework was used to build the user interfaces.

3. Customer Evaluation

   After the prototype with user interfaces was developed, the prototype was evaluated by stakeholders. 10 random users who can act as a customer who want to make reservation online were selected to evaluate the user interface of web pages related to reservation making. Other than that, 5 users who were the waiters at the restaurant were also selected to evaluate the user interface of web pages related to reservation management. After the evaluation, their feedbacks and comments were collected as an outcome of this phase.

4. Refining Prototype

   The feedbacks and comments collected were used to make improvement on the user interface of restaurant reservation system prototype.

#### 3.2.3.2 Iteration 2

In this second iteration, the prototype was included basic operations which are create, read, update and delete functions, also known as CRUD. The prototype built in the first iteration was connected with phpMyAdmin database as well as some source code was written for essential functionality and CRUD operations.

1. Quick Design

   The database diagram and overall architecture of restaurant reservation system was designed and sketched with draw.io. The

sketch illustrated the implementation of CRUD operations and data flows in the prototype.

2. Building Prototype

   A database was setup in phpMyAdmin and connected into the prototype. Other than that, SQL queries were written for data retrieving and manipulating in backend of the system. Besides that, the source code for CRUD operations and essential functionalities were written as well.

3. Customer Evaluation

   The evaluation process was almost similar as previous iteration. The difference is that the selected users will interact with the CRUD operations in the prototype such as book a table, view reservation list and so on, and give feedbacks and comments on them.

4. Refining Prototype

   The feedbacks and comments collected were used to enhance the essential functionalities and CRUD operations in restaurant reservation system prototype. The bugs or errors found during the previous phase were also fixed before proceed to next iteration.

#### 3.2.3.3 Iteration 3

In the final iteration, all functional and non-functional requirements were included into the prototype, which means a complete prototype with full functionality was going to be developed.

1. Quick Design

   The additional features and functionalities were listed and sketched based on the functional and non-functional requirements. Other than that, the database diagram and overall architecture of restaurant reservation system were modified to fit in the additional features.

2. Building Prototype

   A database in in phpMyAdmin and the source code were modified for new additional features.

3. Customer Evaluation

   The full functioning prototype was evaluated by the same users selected in iteration 1 and 2. The limitation and users' expectation on the finalized prototype were recorded for the final refinement of prototype. Besides that, the final evaluation would ensure that all the requirements are met.

4. Refining Prototype

   The refinement of prototype was performed for the last time to eliminate the limitation collected from users and ensure no missing requirements.

### 3.2.4 Engineer Product

After completing all the iteration, the prototype with all working features was completed and readied to proceed to this final phase. Before the finalized prototype was released, there were several testing activities required to be performed and documented to ensure the prototype is bug-free and high-quality. The testing activities are unit testing, cross browser testing, integration testing and user acceptance testing.

#### 3.2.4.1 Unit Testing

The individual modules in restaurant reservation system were tested manually to ensure every single module performs as expected and function correctly. The expected results and actual results were identified and recorded into test cases document. If the expected result is not different from actual result, it indicates bugs or failures existing in the system and must be fixed before the integration testing starts.

#### 3.2.4.2 Browser Compatibility Testing

Browser compatibility testing is a non-functional testing but to test whether the system developed is able to run on modern browsers available in the current market. The

examples of modern browsers are Google Chrome, Firefox, Safari, Internet Explorer and Edge. It is still important to be test the functionality and user interface of the system in different browser to provide consistent experience to users across all the browsers.

#### 3.2.4.3 Integration Testing

After unit testing is completed, all the individual modules in restaurant reservation system were integrated for testing to discover the potential defects or errors in the system when all the modules were functioning together. Integration testing was also documented in test case to track and re-test the defects if there is any.

#### 3.2.4.4 User Acceptance Testing

The last testing activities before release the system will be user acceptance testing. This testing was performed by stakeholders or users to verify and validate whether all the requirements are met. If the final version of system is accepted by stakeholders or users, the system is ready to deploy to production environment.

## 3.3 Project Plan

### 3.3.1 Work Breakdown Structure

0.0 Restaurant Reservation System

1.0 Project Planning

- 1.1 Identify Problem Statement
- 1.2 Identify Project Objectives, Scopes, and Deliverables
- 1.3 Identify Project Solution
- 1.4 Identify Project Approach
  - 1.4.1 Identify Development Approach
  - 1.4.2 Identify Research Method

2.0 Requirement Gathering and Analysis

- 3.1 Develop Questionnaire
  - 3.1.1 Design Closed-End Questions
  - 3.1.2 Distribute Questionnaire
  - 3.1.3 Analyse Results Collected
- 3.2 Literature Review
  - 3.2.1 Analyse Existing Similar Restaurant Reservation Systems
  - 3.2.2 Analyse Software Development Methodologies
  - 3.2.3 Analyse Web Application Frameworks

3.0 Preliminary Design

- 3.1 Building Low-Fidelity Prototype

4.0 Building Prototype

- 4.1 Iteration 1
  - 4.1.1 Quick Design 1
  - 4.1.2 Building Prototype 1
    - 4.1.2.1 User Interface Design
  - 4.1.3 Customer Evaluation 1
  - 4.1.4 Refining Prototype 1
- 4.2 Iteration 2
  - 4.2.1 Quick Design 2
  - 4.2.2 Building Prototype 2
    - 4.2.2.1 Create Database
    - 4.2.2.2 Develop CRUD Operations

4.2.2.3 Develop Essential Features

4.2.3 Customer Evaluation 2

4.2.4 Refining Prototype 2

4.3 Iteration 3

4.3.1 Quick Design 3

4.3.2 Building Prototype 3

4.3.2.1 Table Booking

4.3.2.2 Reservation Management

4.3.2.3 Restaurant Menu Management

4.3.2.4 Reservation Status Email Notification

4.3.2.5 Exporting Report Feature

4.3.2.6 Reporting Feature

4.3.2.7 Food Pre-order

4.3.2.8 User Authentication and Authorization

4.3.3 Customer Evaluation 3

4.3.4 Refining Prototype 3

5.0 Engineer Product

5.1 Testing Activities

5.1.1 Unit Testing

5.1.2 Browser Compatibility Testing

5.1.3 Integration Testing

5.1.4 User Acceptance Testing

### 3.3.2 Work Breakdown Structure Diagram

Appendix B presents the Work Breakdown Structure Diagram created according to Work Breakdown Structure in previous section 3.3.1. The purpose of Work Breakdown Structure is to break down the scope of project into smaller parts so that the deliverables are precise and easy to understand what are needed to accomplish.

### 3.3.3 Gantt Chart


Figure 3-1: FYP 1 Gantt Chart

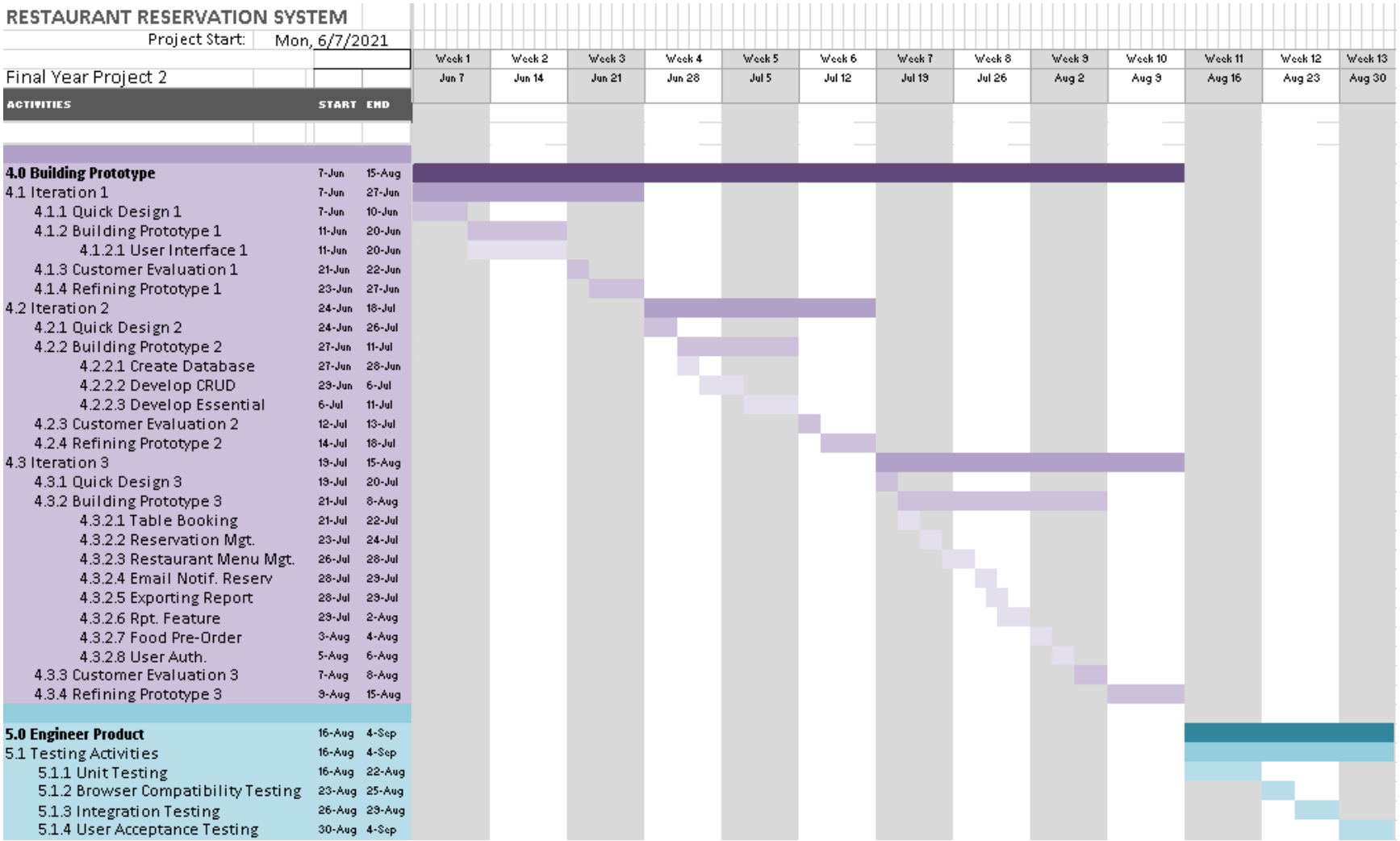



Figure 3-2: FYP 2 Gantt Chart

## 3.4 Development Tools

### 3.4.1 Bootstrap

Bootstrap is a well-known CSS front-end framework for web application developer to build a mobile-responsive and mobile-friendly web application. The reason bootstrap was used is due to the large community and support. The number of watches, stars, forks, download and search result of Bootstrap 4 is high. It indicates that users are able to get more available support and references due to its popularity (Befekadu Mezgebu Temere, 2017). Besides that, the HTML and CSS based design templates is available online, therefore it speeded up the user interface design for this project. Furthermore, bootstrap framework supports for Chrome, Firefox, Opera, Safari and Internet Explorer (Befekadu Mezgebu Temere, 2017).

### 3.4.2 Visual Studio Code

Visual Studio Code was used as a source code editor in this project. It supports hundreds of programming language including the web programming language. The various type of useful features available in Visual Studio Code provide developers the needs of quick code-build-debug cycle, which could increase the productivity in development lifecycle.

### 3.4.3 PhpMyAdmin - MariaDB

For database, phpMyAdmin was used to handling all the data related operation such as reading, inserting, updating and deleting. MariaDB is an open-source MySQL relational database management system as well as a commercially supported fork of MySQL which support various type of storage engines. In this project, InnoDB was used as a storage engine as InnoDB has many features such as foreign key constraints support, cluster database support, support for large buffer pool for both data and indexes, resistant to table corruption and so on. Furthermore, phpMyAdmin is GUI-based application used for SQL database management, which provides convenience in performing database creation, query execution, relationship creation and many other functions.

# CHAPTER 4

# PROJECT SPECIFICATION

## 4.1 Introduction

In this chapter, use case diagram was created along with description for each use case for Restaurant Reservation System. The purpose of use case diagram created is to summarize how the diners and restaurateurs will interact with the reservation system and describe the relationship between end-users and reservation system.

## 4.2 Functional and Non-Functional Requirements

### 4.2.1 Functional Requirements

The functional requirements of restaurant reservation system for diners are outlined as below:

- The system shall allow diners to create an account as customer before they make a reservation.
- The system shall allow diners to sign in their account as customer to access to the system.
- The system shall allow diners to make a reservation on the selected data and time.
- The system shall allow diners to view the restaurant menu.
- The system shall allow diners to view the details of dishes in restaurant menu.
- The system shall allow diners to pre-order their foods for their reservation after they make a reservation.
- The system shall allow diners to view the details of their reservations.
- The system shall allow diners to modify their reservation details at least 2 hours in advance of their reservation.
- The system shall allow diners to cancel their reservation at least 2 hours in advance of their reservation.
- The system shall allow diners to modify their reservation details, including pre-ordered food list at least 2 hours in advance of their reservation

The functional requirements for restaurateurs:

- The system shall allow restaurateurs to sign in their account as admin to access the system.
- The system shall allow restaurateurs to view the details of reservation list.
- The system shall allow restaurateurs to view the details of pre-ordered dishes in the reservation details.
- The system shall allow restaurateurs to update the status of reservation made by diners by confirming and rejecting it.
- The system shall allow restaurateurs to automatically send the email notification of reservation status to diners after restaurateurs confirm or reject the reservation.
- The system shall allow restaurateurs to update the details of their dishes in restaurant menu such as the price, name, description and image of the dishes.
- The system shall allow restaurateurs to insert new dishes into their restaurant menu.
- The system shall allow restaurateurs to inactivate the dish instead of delete the dish when the dish is not available or out of stock.
- The system shall allow restaurateurs to view diner frequency and top 10 dishes pre-ordered by diner.

### 4.2.2 Non-Functional Requirements

- The system shall achieve a consistency in user interface design for better user experience when they interact with the system.
- The system shall be able to run on Chrome, Firefox, Internet Explorer and web browser in mobile phone.
- The system shall not have web page loading time more than 6 seconds.
- The system shall display a message to notify users after create, update, and delete operations are performed successfully.

## 4.3 Use Case Diagram

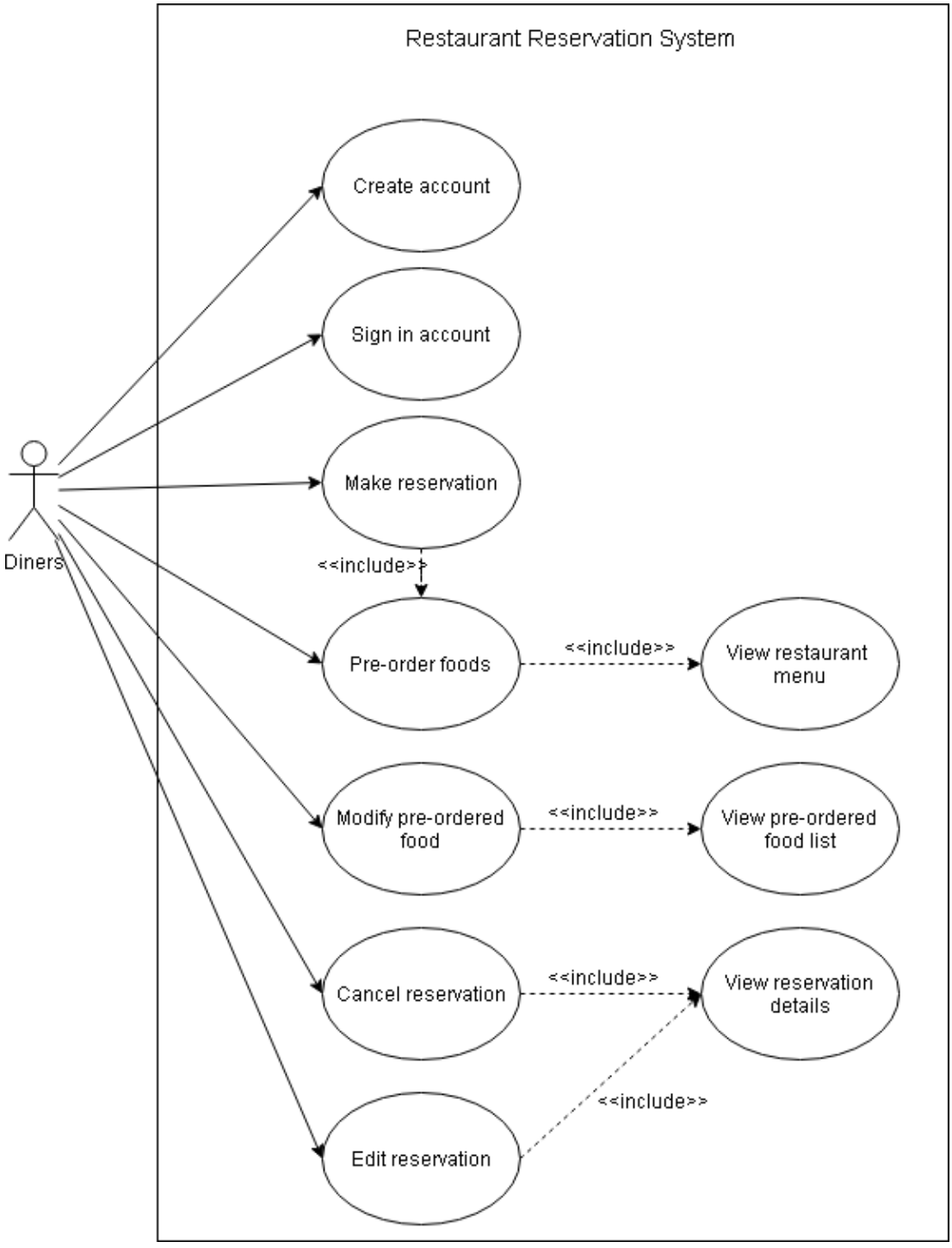



Figure 4-1: Diners - Restaurant Reservation System Use Case Diagram

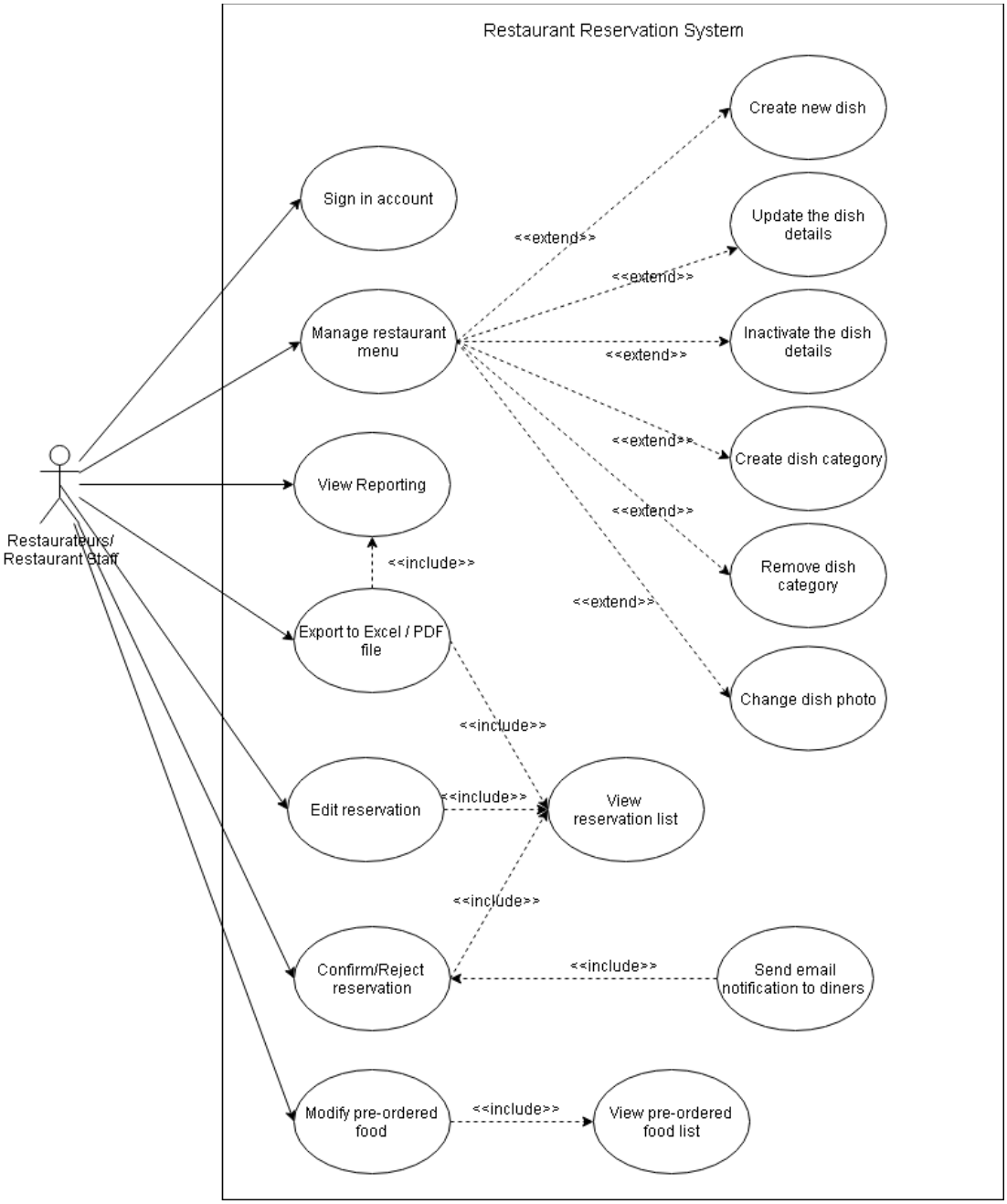



Figure 4-2: Restaurateurs/ Restaurant Staff - Restaurant Reservation System Use Case Diagram

## 4.4 Use Case Description

Table 4-1: Create Account

| | |
|---|---|
| Use Case ID | C4-1 |
| Use Case Name | Create Account |
| Actor | Diner |
| Description | Diner signs up an account in the system |
| Preconditions | - |
| Flow of Events:<br>1. Diner clicks "Sign up" button on top right corner in main page of the system.<br>2. Diner inputs username, email, and password into the mandatory text box.<br>3. Diner input password again to confirm the password.<br>4. Diner clicks to agree the terms of use and privacy policy.<br>5. Diner clicks "Register Now" button to create account.<br>6. System inserts the account details filled in by diner into database. | |
| Alternative Flow of Events:<br>1.1 The username or email exists in database.<br>1.1.1 Diner perform use case "Create Account".<br>1.1.2 System displays error message to indicate the username or email already existed in the system. | |

Table 4-2: Sign in Account (As diner)

| | |
|---|---|
| Use Case ID | C4-2 |
| Use Case Name | Sign in Account |
| Actor | Diner |
| Description | Diner sign in account to access the system. |
| Preconditions | Diner must have an account before performing this action. |
| Flow of Events:<br>1. Diner clicks "Sign In" button on top right corner in main page of the system.<br>2. Diner inputs username and password in the text box.<br>3. Diner clicks "Sign In" button.<br>4. System validates the account and password input by diner.<br>5. Diner successfully access the system. | |
| Alternative Flow of Events:<br>1.1 Diner input invalid or non-existed username<br>1.1.1 System displays the error message indicating username is not valid or existed.<br>1.2 Diner input wrong password.<br>1.2.1 System displays the error message indicating password is incorrect. | |

Table 4-3: Make Reservation

| | |
|---|---|
| Use Case ID | C4-3 |
| Use Case Name | Make Reservation |
| Actor | Diner |
| Description | Diner makes reservation in the system by filling in the mandatory information such as:<br>1. Number of persons<br>2. Date and time<br>3. Name<br>4. Email and phone number |
| Preconditions | Diner must sign in the system before making reservation. |
| Flow of Events:<br>1. Diner clicks "Make Reservation Now" button.<br>2. Diner fills in number of person and chooses the date and time.<br>3. Diner fills in his or her name, email and phone number.<br>4. Diner clicks "Confirm Booking" to complete the reservation making action.<br>5. System inserts the reservation details into the database. | |
| Alternative Flow of Events:<br>1.1 Diner fails to fill in the mandatory information.<br>1.1.1 System display error message beside the mandatory field that is not filled in by diner.<br>1.1.2 System disable the "Confirm Booking" button. | |

Table 4-4: View Restaurant Menu

| | |
|---|---|
| Use Case ID | C4-4 |
| Use Case Name | View Restaurant Menu |
| Actor | Diner |
| Description | Diner view the restaurant menu in the system. The information in restaurant menu include:<br>1. Dish name<br>2. Dish description<br>3. Dish price |
| Preconditions | - |
| Flow of Events:<br>1. Diner sign in the system (Sign in Use Case).<br>2. Diner clicks "View Restaurant Menu".<br>3. System display restaurant menu with every detailed information of dishes. | |

Table 4-5: Pre-Order Foods

| | |
|---|---|
| Use Case ID | CR4-5 |
| Use Case Name | Pre-Order Foods |
| Actor | Diners / Restaurateurs/Restaurant Staff |
| Description | Diners are able to pre-order foods for their own reservation, while restaurateurs or restaurant staff are authorized to pre-order food for all reservations. |
| Preconditions | 1. Date of reservation must be later than current date and time.<br>2. Status of reservation must be either "Pending", "Edited" or "Confirmed". Rejected or cancelled reservations will disable "pre-order" button. |
| Flow of Events:<br>1. Actor clicks "View Pre-Order Food List" tab.<br>2. System retrieves and displays list of reservation from database.<br>3. Actor clicks "pre-order" button on selected reservation.<br>4. System displays restaurant menu.<br>5. Actor adds the food into the list by clicking "+" button.<br>6. Actor confirms the food pre-ordering. | |

| |
|---|
| 7. System records the pre-ordered foods details with reservation details into database |
| Alternative Flow of Events:<br>1.0 After actor performs “Make Reservation” use case,<br>1.1 System displays a message to ask actor if actor want to pre-order food for reservation.<br>1.2 If actor clicks “Yes”, actor is able to perform this use case. |

Table 4-6: View Reservation Details

| | |
|---|---|
| Use Case ID | C4-6 |
| Use Case Name | View Reservation Details |
| Actor | Diner |
| Description | Diners check the reservation details in the system. |
| Preconditions | Diner must sign in the system before checking the reservation details. |
| Flow of Events:<br>1. Diner sign in the system. (Sign in Use Case)<br>2. Diner clicks his/her profile.<br>3. Diner clicks “View Reservation Detail” hyperlink.<br>4. System retrieves all the reservation details, including the past reservation records that belongs to the diner’s account. | |
| Alternative Flow of Events:<br>1.1 Diner does not make any reservation in the system.<br>1.1.1 System displays “No reservation records” message. | |

Table 4-7: Cancel Reservation

| | |
|---|---|
| Use Case ID | C4-7 |
| Use Case Name | Cancel Reservation |
| Actor | Diner |
| Description | Diners check the reservation details in the system. |
| Preconditions | 1. Diner must sign in the system to cancel the reservation.<br>2. Diner must have at least one upcoming reservation. |
| Flow of Events:<br>1. Diner signs in the system. (Sign in Use Case) | |

| |
|---|
| 2. Diner views reservation details (View Reservation Details Use Case).<br>3. Diner selects upcoming reservation.<br>4. Diner clicks "Cancel Reservation" button.<br>5. System pops up confirmation message for diner.<br>6. Diner clicks "Yes" to confirm to confirm the reservation cancellation. |
| Alternative Flow of Events:<br>1.1 Diner does not cancel upcoming reservation at least 2 hours in advance of their reservation<br>1.1.1 The system disables the cancel button. |

Table 4-8: Sign in Account (as Admin)

| Use Case ID | R4-8 |
|---|---|
| Use Case Name | Sign in Account |
| Actor | Restaurateurs/Restaurant Staff |
| Description | Restaurateurs or restaurant staff sign in as admin to access the system. |
| Preconditions | - |
| Flow of Events:<br>1. Restaurateurs or restaurant staff clicks "Sign In" button on top right corner in main page of the system.<br>2. Restaurateurs or restaurant staff inputs admin username and password.<br>3. Restaurateurs or restaurant staff clicks "Sign In" button.<br>4. System validates the admin account and password with user database.<br>5. Restaurateurs or restaurant staff successfully access the system. | |
| Alternative Flow of Events:<br>1.1 Restaurateurs or restaurant staff input invalid or non-existed username<br>1.1.1 System displays the error message indicating admin username is incorrect.<br>1.2 Restaurateurs or restaurant staff input wrong password.<br>1.2.1 System displays the error message indicating password is incorrect. | |

Table 4-9: View Reporting

| Use Case ID | R4-9 |
|---|---|
| Use Case Name | View Reporting |
| Actor | Restaurateurs/Restaurant Staff |
| Description | Restaurateurs or restaurant staff view the reporting in the system. The reporting includes guest frequency and top dishes pre-ordered by diners. |
| Preconditions | Restaurateurs or staff must sign in with admin account. |
| Flow of Events:<br>1. Restaurateurs or staff signs in with admin account (Sign in Account Use Case).<br>2. Restaurateurs or staff clicks "View Reports" tab.<br>3. Restaurateurs or staff selects the report and filters.<br>4. Restaurateurs or staff clicks "View Report" button.<br>4. System retrieves and displays the data related to the reporting selected. | |

Table 4-10: Manage Restaurant Menu

| Use Case ID | R4-10 |
|---|---|
| Use Case Name | Manage Restaurant Menu |
| Actor | Restaurateurs/Restaurant Staff |
| Description | Restaurateurs or restaurant staff manage restaurant menu in the system by creating, updating, or inactivating dishes. |
| Preconditions | Restaurateurs or staff must sign in with admin account. |
| Flow of Events:<br>1. Restaurateurs or staff signs in with admin account (Sign in Account Use Case).<br>2. Restaurateurs or staff clicks "Manage Restaurant Menu" tab.<br>3. System redirects Restaurateurs or staff to Menu Management web page.<br>4. System retrieves all dishes record from database and displays them. | |
| Alternative Flow of Events:<br>1. Restaurateurs or staff creates new dish<br>1.0 Restaurateurs or staff clicks "Create New Dish" button.<br>1.1 Restaurateurs or staff performs "Create New Dish" Use Case.<br>2. Restaurateurs or staff update dish details<br>2.0 Restaurateurs or staff selects the dish. | |

| |
|---|
| 2.1 Restaurateurs or staff clicks “Update Dish” button.<br>2.2 Restaurateurs or staff performs “Update Dish” Use Case.<br>3. Restaurateurs or staff inactivate dish<br>3.0 Restaurateurs or staff selects the dish.<br>3.1 Restaurateurs or staff click “Update Dish” button.<br>3.2 Restaurateurs or staff performs “Inactivate Dish” Use Case. |

Table 4-11: Create New Dish

| | |
|---|---|
| Use Case ID | R4-11 |
| Use Case Name | Create New Dish |
| Actor | Restaurateurs/Restaurant Staff |
| Description | Restaurateurs or restaurant staff creates a new dish into the menu. The information of dish such as dish name, description and price are required to fill in. |
| Preconditions | - |
| Flow of Events:<br>1. Restaurateurs or staff clicks “Manage Restaurant Menu” tab.<br>2. Restaurateurs or staff clicks “Add New Dish” button.<br>3. System shows “Create New Dish” modal.<br>4. Restaurateurs or staff fills in the information of new dish.<br>5. Restaurateurs or staff clicks “Add” button.<br>6. System records the new dish information into the database.<br>7. System displays message indicating the new dish is successfully added. | |

Table 4-12: Update Dish Details

| | |
|---|---|
| Use Case ID | R4-12 |
| Use Case Name | Update Dish Details |
| Actor | Restaurateurs/Restaurant Staff |
| Description | Restaurateurs or restaurant staff selects a dish and updates its information. |
| Preconditions | - |
| Flow of Events:<br>1. System redirects restaurateurs or staff to “Update Dish Detail” web page. | |

| |
|---|
| 2. System retrieves the dish record selected by restaurateurs or staff from database.<br>2. Restaurateurs or staff replace the old information of dish with new one.<br>3. Restaurateurs or staff clicks “Update” button.<br>4. System update the dish information in the database.<br>5. System displays message indicating the dish record is successfully updated. |

Table 4-13: Inactivate Dish

| | |
|---|---|
| Use Case ID | R4-13 |
| Use Case Name | Inactivate Dish |
| Actor | Restaurateurs/Restaurant Staff |
| Description | Restaurateurs or restaurant staff selects a dish and inactivate it. |
| Preconditions | - |
| Flow of Events:<br>1. System redirects restaurateurs or staff to “Update Dish Detail” web page.<br>2. System retrieves the dish record selected by restaurateurs or staff from database.<br>2. Restaurateurs or staff unchecks the “Active” checkbox.<br>3. Restaurateurs or staff clicks “Update” button.<br>4. System update the dish information in the database.<br>5. System displays message indicating the dish record is successfully updated. | |

Table 4-14: View Reservation List

| | |
|---|---|
| Use Case ID | R4-14 |
| Use Case Name | View Reservation List |
| Actor | Restaurateurs/Restaurant Staff |
| Description | Restaurateurs or restaurant staff check the reservation list and reservation details. |
| Preconditions | Restaurateurs or staff must sign in with admin account. |
| Flow of Events:<br>1. Restaurateurs or staff clicks “View Reservation List” hyperlink.<br>2. System redirects restaurateurs or staff to “Reservation Detail” web page.<br>3. System retrieves all upcoming reservation records from database.<br>4. Restaurateurs or staff selects the reservation to view the full details of reservation. | |

Table 4-15: View Pre-ordered Food List

| Use Case ID | CR4-15 |
|---|---|
| Use Case Name | View Pre-ordered Food List |
| Actor | Diners/ Restaurateurs/Restaurant Staff |
| Description | Diners are able to view their own pre-ordered food list, while restaurateurs or restaurant staff are authorized to view all diners' pre-ordered food list. |
| Preconditions | A selected reservation must have at least one pre-ordered food. |
| Flow of Events:<br>1. Actor clicks "View Pre-Ordered Food List" tab.<br>2. System retrieves and displays list of reservation from database.<br>3. Actor clicks "View" button on selected reservation.<br>4. System retrieves and displays list of pre-ordered foods of selected reservation from database. | |
| Alternative Flow of Events:<br>1.0 After actor clicks "View" button on selected reservation, there is no pre-ordered food record in database.<br>1.1 System displays "Pre-ordered Food List is empty!" and shows "Pre-Order Food" button for actor to perform "Pre-Order Food" use case. | |

Table 4-16: Confirm/Reject Reservation

| Use Case ID | R4-16 |
|---|---|
| Use Case Name | Confirm/Reject Reservation |
| Actor | Restaurateurs/Restaurant Staff |
| Description | Restaurateurs or restaurant staff confirms or rejects the reservation after diners make the reservation. |
| Preconditions | Restaurateurs or staff must sign in with admin account. |
| Flow of Events:<br>1. Restaurateurs or staff performs "View Reservation List" Use Case.<br>2. Restaurateurs or staff selects a reservation from the list.<br>3. Restaurateurs or staff clicks "Confirm" button or "Reject" button.<br>4. System pops out confirmation message for confirming their action.<br>5. System updates the status of reservation in the database. | |

Table 4-17: Send Email Notification to Diner

| Use Case ID | R4-17 |
|---|---|
| Use Case Name | Send Email Notification to Diner |
| Actor | Restaurateurs/Restaurant Staff |
| Description | After restaurateurs or restaurant staff confirms or rejects the reservation, the system will automatically send email about the reservation status to diner. |
| Preconditions | - |
| Flow of Events:<br>1. Restaurateurs or staff performs "Confirm/Reject Reservation" Use Case.<br>2. System automatically generates an email with the status of reservation and sends to diner who makes the reservation. | |

Table 4-18: Modify Pre-Order Food

| Use Case ID | CR4-18 |
|---|---|
| Use Case Name | Modify pre-order food |
| Actor | Diners / Restaurateurs/Restaurant Staff |
| Description | Diners are able to modify their own pre-ordered food list, while restaurateurs or restaurant staff are authorized to modify all pre-ordered food list. |
| Preconditions | A selected reservation must have at least one pre-ordered food. |
| Flow of Events:<br>1. Actor clicks "View pre-ordered food list" tab.<br>2. System retrieves and display list of reservation from database.<br>3. Actor clicks "Edit" button on selected reservation.<br>4. System retrieves and display list of pre-ordered food from base on selected reservation's identification number.<br>5. Actor adds and removes desired food into pre-ordered food list. | |
| Alternative Flow of Events:<br>2.0 After actor clicks "Edit" button on selected reservation, there is no pre-ordered food record in database.<br>1.1 System displays "Pre-ordered Food List is empty!" and shows "Pre-Order Food" button for actor to perform "Pre-Order Food" use case. | |

Table 4-19: Edit Reservation

<table>
<tr><td>Use Case ID</td><td colspan="2">CR4-19</td></tr>
<tr><td>Use Case Name</td><td colspan="2">Edit Reservation</td></tr>
<tr><td>Actor</td><td colspan="2">Diners / Restaurateurs/Restaurant Staff</td></tr>
<tr><td>Description</td><td colspan="2">Diners are able to modify their own reservation, while restaurateurs or restaurant staff are authorized to modify all diner’s reservation.</td></tr>
<tr><td>Preconditions</td><td colspan="2">1. Diners are restricted to edit their reservation at least 2 hours in advance of their reservation.</td></tr>
<tr><td colspan="3">Flow of Events:</td></tr>
<tr><td colspan="2">Actor: Diners</td><td>Actor: Restaurateurs/Restaurant Staff</td></tr>
<tr><td colspan="2">1. Diners perform “View Reservation Details” use case.<br>2. Diners click “Edit” button on selected reservation.<br>3. System show “Edit Reservation” modal.<br>4. Diners fills in all the required input fields.<br>5. Diners clicks “Modify Reservation” button.<br>6. System updates the reservation details in database.</td><td>1.Restaurateurs or restaurant staff perform “View Reservation List” use case.<br>2. Restaurateurs or restaurant staff click “Edit” button on selected reservation.<br>3. System show “Edit Reservation” modal.<br>4. Restaurateurs or restaurant staff fills in all the required input fields.<br>5. Restaurateurs or restaurant staff clicks “Modify Reservation” button.<br>6. System updates the reservation details in database.</td></tr>
<tr><td colspan="3">Alternative Flow of Events:<br>1.0 Both actors leave required input fields blank and clicks “Modify Reservation” button.<br>1.1 The input fields are highlighted and asking actors to fill in.</td></tr>
</table>

Table 4-20: Create Dish Category

| | |
|---|---|
| Use Case ID | R4-20 |
| Use Case Name | Create Dish Category |
| Actor | Restaurateurs/Restaurant Staff |
| Description | Restaurateurs or restaurant staff creates a new dish category into the menu. Dish category can be created when creating a new dish in "Create New Dish" modal. |
| Preconditions | - |
| Flow of Events:<br>1. Restaurateurs or restaurant staff click "Manage Restaurant Menu" tab.<br>2. Restaurateurs or restaurant staff click "Add Dish Category" button.<br>3. Restaurateurs or restaurant staff fills in the name of new dish category.<br>4. Restaurateurs or restaurant staff click "Create New Category" button.<br>5. System records the new dish category into database. | |
| Alternative Flow of Events:<br>1.0 Restaurateurs or restaurant staff leave the "Dish Category" input field empty.<br>1.1 The input fields are highlighted and asking actors to fill in. | |

Table 4-21: Remove Dish Category

| | |
|---|---|
| Use Case ID | R4-21 |
| Use Case Name | Remove Dish Category |
| Actor | Restaurateurs/Restaurant Staff |
| Description | Restaurateurs or restaurant staff remove dish category. All dishes which are categorized as the removed dish category will be automatically updated to dish category "Others". |
| Preconditions | - |
| Flow of Events:<br>1. Restaurateurs or restaurant staff click "Manage Restaurant Menu" tab.<br>2. Restaurateurs or restaurant staff click "Remove Dish Category" button.<br>3. Restaurateurs or restaurant staff select the dish category from drop-down list.<br>4. Restaurateurs or restaurant staff click "Remove Category" button.<br>5. System deletes the selected dish category from database and updates all dish records which contain the deleted dish category to "Others". | |

Table 4-22: Change Dish Photo

| Use Case ID | R4-22 |
|---|---|
| Use Case Name | Change Dish Photo |
| Actor | Restaurateurs/Restaurant Staff |
| Description | Restaurateurs or restaurant staff are able to change the dish's photo in restaurant menu management. |
| Preconditions | - |
| Flow of Events:<br>1. Restaurateurs or restaurant staff click "Manage Restaurant Menu" tab.<br>2. Restaurateurs or restaurant staff click "Change Photo" button on selected dish.<br>3. Restaurateurs or restaurant staff click "Choose file" and select an image file.<br>4. Restaurateurs or restaurant staff click "Change Photo" button.<br>5. System verifies the file type and file size of the uploaded image, and replace the existing image file with uploaded image file. | |
| Alternative Flow of Events:<br>1.0 Image file size exceeds 2 Megabytes (MB) or file type is not image.<br>1.1 System displays error message. | |

| Use Case ID | R4-23 |
|---|---|
| Use Case Name | Export to Excel / PDF file |
| Actor | Restaurateurs/Restaurant Staff |
| Description | Restaurateurs or restaurant staff are able to export reservation list to either excel or pdf format. There will be selection of report type to be chosen. |
| Preconditions | - |
| Flow of Events:<br>1. Restaurateurs or restaurant staff perform "View Reservation List" use case<br>2. Restaurateurs or restaurant staff select file type and type of reservations to be exported<br>3. System retrieves the reservations from database and exports them into the file type chosen by restaurateurs or restaurant staff. | |

## 4.5 Facts Finding Analysis

Two types of questionnaires, which were designed for restaurant diner and restaurant staff were developed with Google Form and randomly distributed through social media. The number of responses for questionnaire designed for restaurant diner is 34 while for restaurant staff is 20. The size of responses was sufficient to obtain more precise results for analysis.

The objective of this survey is to gather their expectation on the features of restaurant reservation system, which is helpful for the development of the system. Besides that, the survey collected the information about the trends of using reservation system. Each questionnaire consists of 4 multiple choice questions.

### 4.5.1 Questionnaire for Restaurant Diner

#### 4.5.1.1 Method Used to Make Reservation

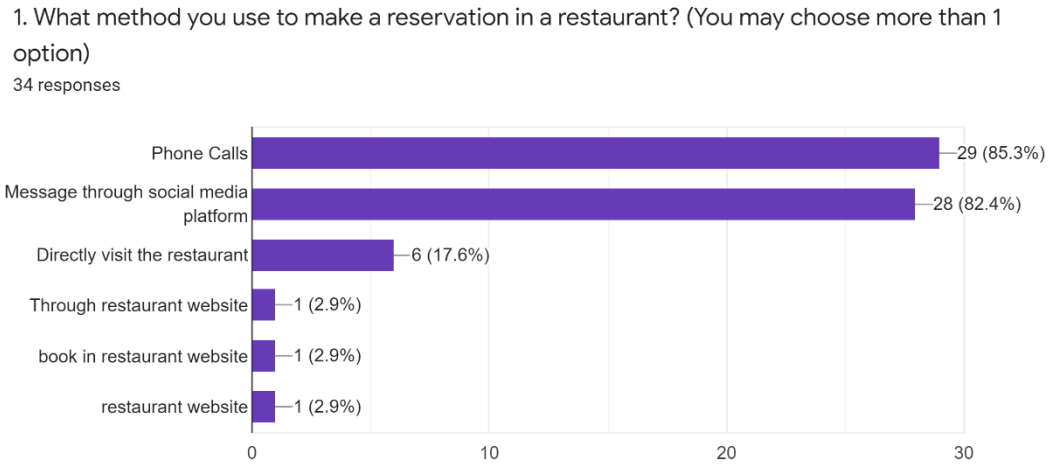



Figure 4-3: Method Used to Make Reservation by Respondents

From the horizontal bar chart in Figure 4-3, majority of the respondents makes reservation through phone calls and social media platform. Moreover, there were 17.6% of the respondent directly visit the restaurant just to make a table reservation. Besides that, there were 3 out of 34 respondents make a reservation via through the restaurant website. This proved that majority of respondents were using the modern technology to book a table instead of physically go to restaurant. Furthermore, there were minority people using the table booking function available in the restaurant website to book table. Thus, most of the respondents had the experiences in looking for a convenient method to make a reservation.

#### 4.5.1.2 Problem Encountered When Making Reservation

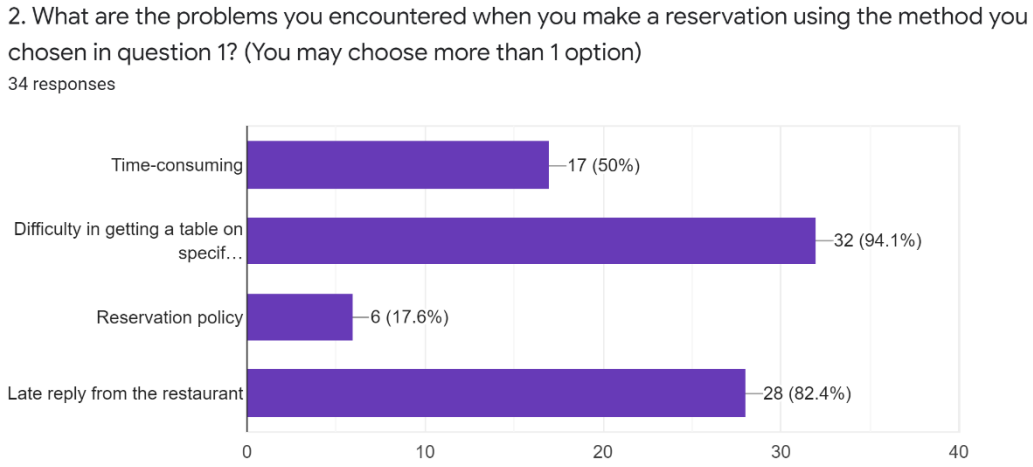



Figure 4-4: Problem Encountered by Respondents When Making Reservation

According to Figure 4-4, 94.1% of the respondents encounter the difficulty in getting a table on specific data and time. This result indicated that respondents are also facing a problem of having information about the availability of the table from the restaurant due to the methods of table booking. Furthermore, there were 82.4% of the respondents encounter problem of late reply from the restaurant. This could be caused by the busy hours in the restaurant. Besides, half of the respondents found that it is time-consuming when they make reservation with the methods they chosen in question 1. The respondents might need to wait for the restaurant to pick up the phone, see the message, call them back for confirmation of table booking and so on. Other than that, there were 6 out of 34 respondents having a problem of reservation policy. The reservation policy includes the reservation fee, restriction on number of persons, cancellation policy and so on, which are frustrating the respondent when making a reservation.

#### 4.5.1.3 Knowledge of Restaurant Reservation System

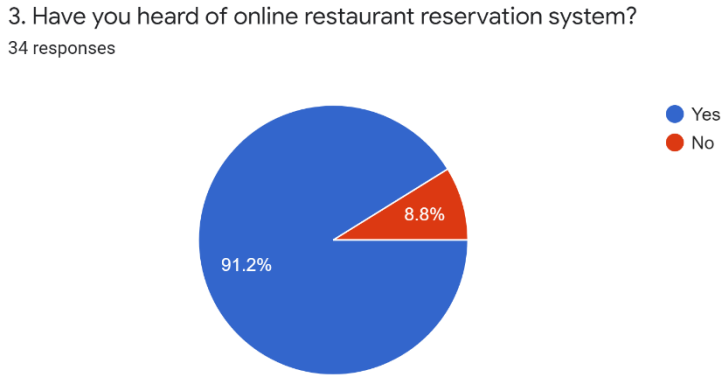



Figure 4-5: Respondent's Knowledge Restaurant Reservation System.

Based on the pie chart above, 91.2% of the respondents known the restaurant reservation system existed in market, while only 8.8% of the respondents did not hear of restaurant reservation system. There was a flaw in this question, which is that there was no question asking the respondent whether they had experience in booking table. If the respondents did not have any experience in booking a table, they might not even hear of restaurant reservation system at all.

#### 4.5.1.4 Expectancy of Functionalities and Features in Restaurant Reservation System by Restaurant Customer

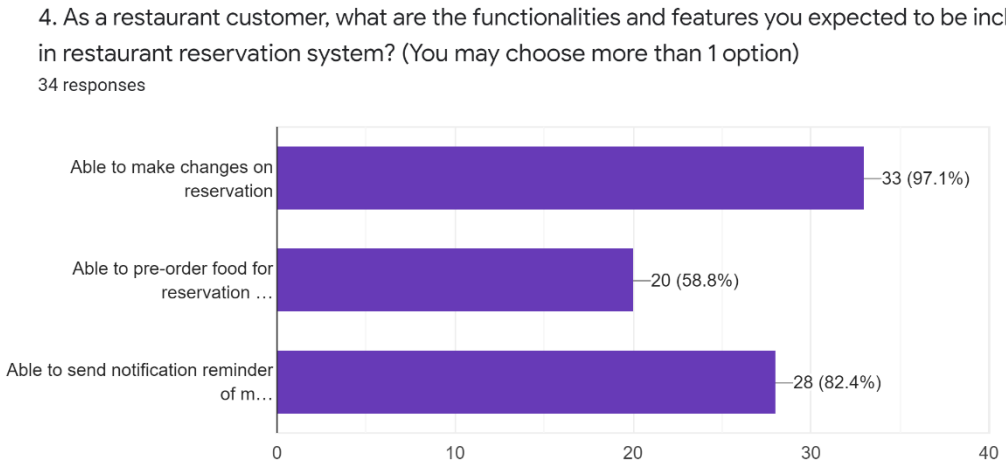



Figure 4-6: Respondent's Expectancy of Functionalities and Features in Restaurant Reservation System.

According to Figure 4-6 above, 33 out of 34 respondents expected the feature of modification on reservation in restaurant reservation system. This is because it is inconvenient and time-consuming to call or message the restaurant just to make some changes on the reservation they have booked. Furthermore, there were 20 respondents expecting the feature of pre-order food for table reservation in the system. This could save them a lot of time as they can directly order the dishes in the system instead of waiting the restaurant waiter to take their order. Moreover, 28 respondents wanted to have a notification reminder of their reservation. Sometime, people are busy with their own work and forget they have made a reservation at the restaurant. Therefore, they expected the system has the ability to send reminder to them.

### 4.5.2 Questionnaire for Restaurant Staff

#### 4.5.2.1 Past Experience and Method Used in Table Reservation Management

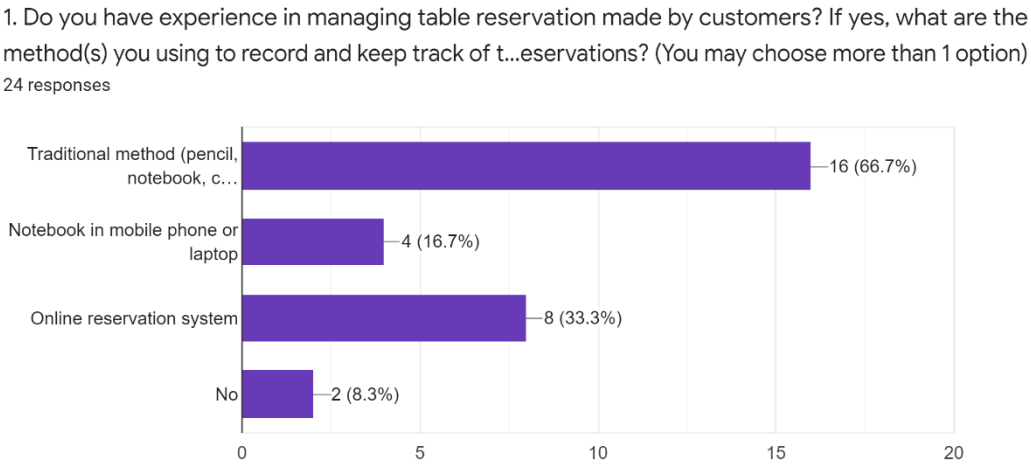



Figure 4-7: Respondent's Past Experience and Method Used in Table Reservation Management.

According to horizontal bar chart in Figure 4-7, there were 16 out of 24 respondents having the experience in managing reservation made by customers, and the method they used to record and keep track of customers' reservations is with paper-based approach. Moreover, 4 out of 24 respondents used notepad available in mobile phone and laptop to keep the reservation records, while there were 8 out of 24 respondents uses online reservation system. There was one respondent (in Figure 4-8) responses that their restaurant combines two methods in table booking management such as paper-based approach and reservation system based on their restaurant business operation. Thus, the results indicated that the online reservation system is not widely used in restaurant industry.

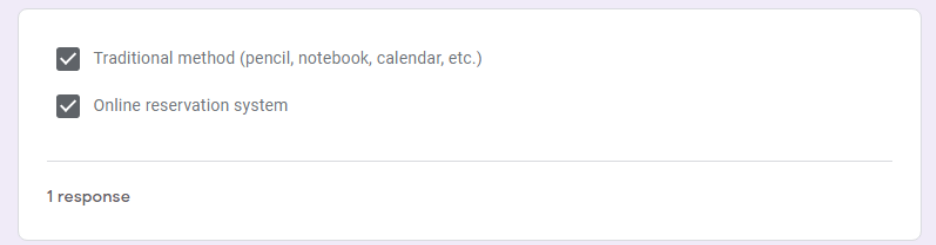



Figure 4-8: Combination of Both Methods in Table Reservation Management by Respondent.

#### 4.5.2.2 Challenges in Assisting Customer to Make Reservation

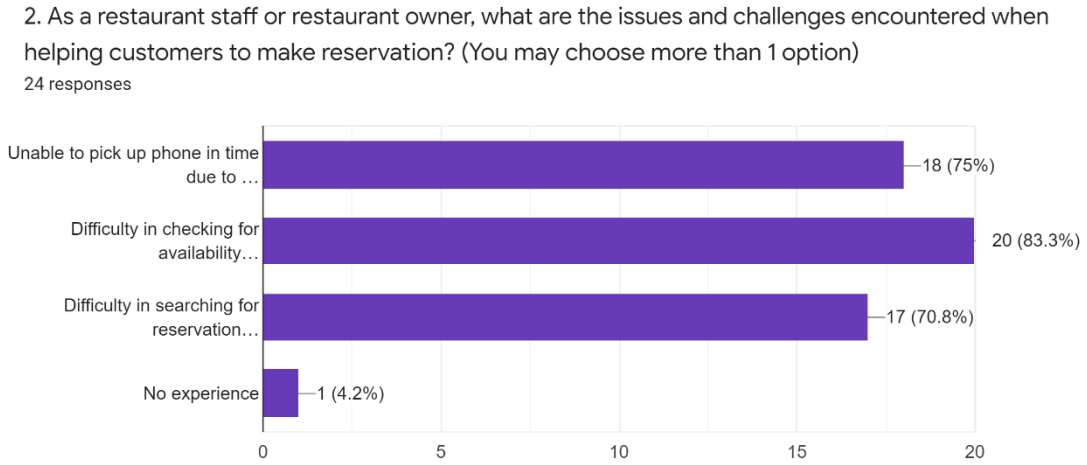



Figure 4-9: Challenges Encountered by Respondents in Assisting Customer to Make Reservation.

According to Figure 4-9, 75% of the respondents encountered challenges in answering the phone call from customers during busy hours, while there were 20 out of 24 respondents find difficulty in checking for availability of tables for customers. Moreover, 70.8% of the respondents find difficulty in searching the reservation record when customers demand for modification on their reservation details. These challenges could be caused by the large amounts of reservations from customers, which can lead to poor efficiency in managing the reservation records. Thus, the results indicated that the respondents face many challenges in managing customer's reservation with their approach used, even with online reservation system.

#### 4.5.2.3 Factors Influence Usage of Restaurant Reservation System

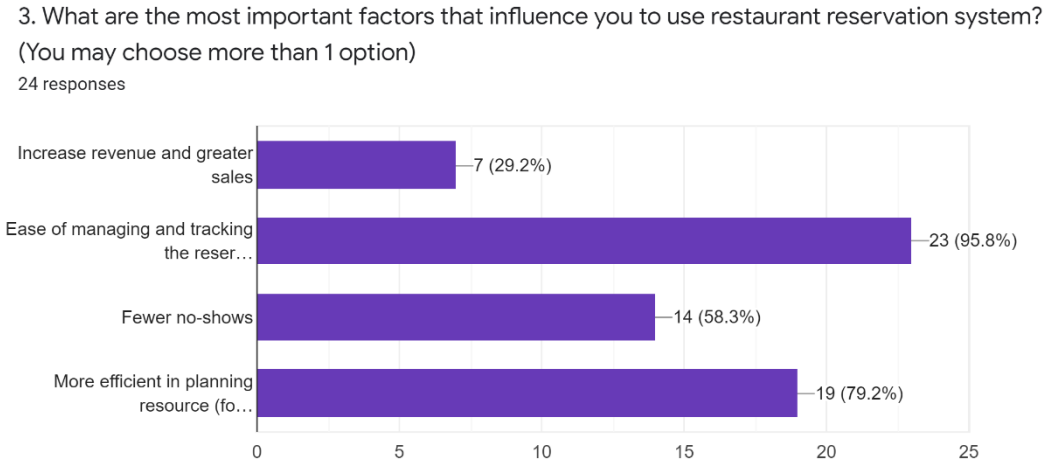



Figure 4-10: Factors Influence Respondents to Use Restaurant Reservation System.

Based on Figure 4-10, minority of respondents, which was 29.2% of the respondents believed that the greater sales and increase in revenue are the factors that influence them to use reservation system. This is because they can put more effort to expand their business with the convenience brought by reservation system. Moreover, the ease of managing and tracking the customers reservation is the most important factor in usage of restaurant reservation system, as 23 out of 24 respondents selected this factor. The reservation system is indeed helpful in increasing efficiency in reservation management, as well as time-saving for restaurant to keep track of all the customers' reservation.

Furthermore, there were 58.3% of the respondents believes that, the rate of customer no shows can be reduced if restaurant reservation system is used. The respondents are afraid that customers are not shown up for their reservation, which may cause some inconvenience for their business as well as affect the revenue. In additional, 79.2% of the respondents believed that the efficiency in planning resource is a factor to use the reservation system. If customers make reservation online, they can easily keep track of assigning their resource effectively to allow the business to be run smoothly.

#### 4.5.2.4 Expectancy of Functionalities and Features in Restaurant Reservation System from Restaurant Staff

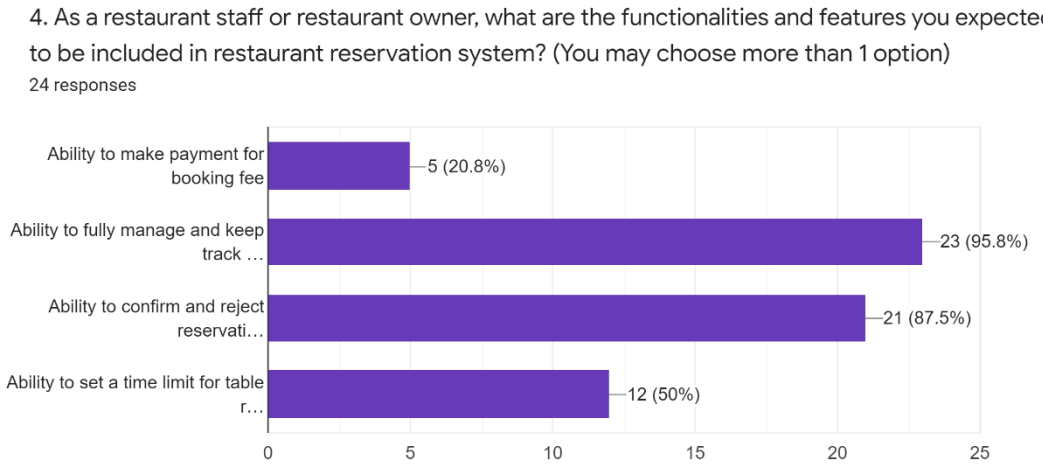



Figure 4-11: Respondent's Expectancy of Functionalities and Features in Restaurant Reservation System.

The bar chart indicates that 23 out of 24 respondents expected essential functionality of the system, which is the ability to fully manage and keep track of reservations. Besides that, 21 out of 24 respondents wanted to have a feature to allow them to confirm and reject the customers' reservation by just one click of button. This feature allow restaurant to quickly make decision on whether to accept the reservation from customer based on the availability of tables on specific date and time.

Furthermore, 5 out of 24 respondents expected to have a payment gateway to pay the booking fee in the system. This result indicates that minority of respondents expect the payment of booking fee to be included to avoid customer's no show, therefore after customers make reservation, they are required to pay the booking fee directly in the system to complete the table booking. Moreover, 12 out of 24 respondents wanted the system to have an ability to set a time limit for every table reserved by customers. Some buffet restaurant has a policy to restrict the time duration for customers to stay in the restaurant, therefore this feature is a good method to do so.

# CHAPTER 5

# SYSTEM DESIGN

## 5.1 Implementation of system

In this chapter, the system design including user interface design, database design and system design will be discussed.

## 5.2 User Interface Design

The system has two types of users. One of the users is normal user, which is known as diners or customers, while another type user is admin, which is restaurant staff or restaurateurs.

### 5.2.1 Home Page, Sign Up and Login Modal

Figure 5-1 below shows the home page screen of restaurant reservation system, which is the first webpage when users visit the website. Both customers and admin are able to perform login by clicking “Login” button on the top-right corner of the screen. For admin, they will have their own admin account to login as admin role. For normal user which is customers or diners, they are able to create an account by clicking “Sign Up” button, as well as login by clicking “Login” button, which is the same method as admin to login their account as normal user. When “Sign Up” button is clicked, the modal is pop up as shown in Figure 5-2, while for “Login”, modal is appear as shown in Figure 5-3.

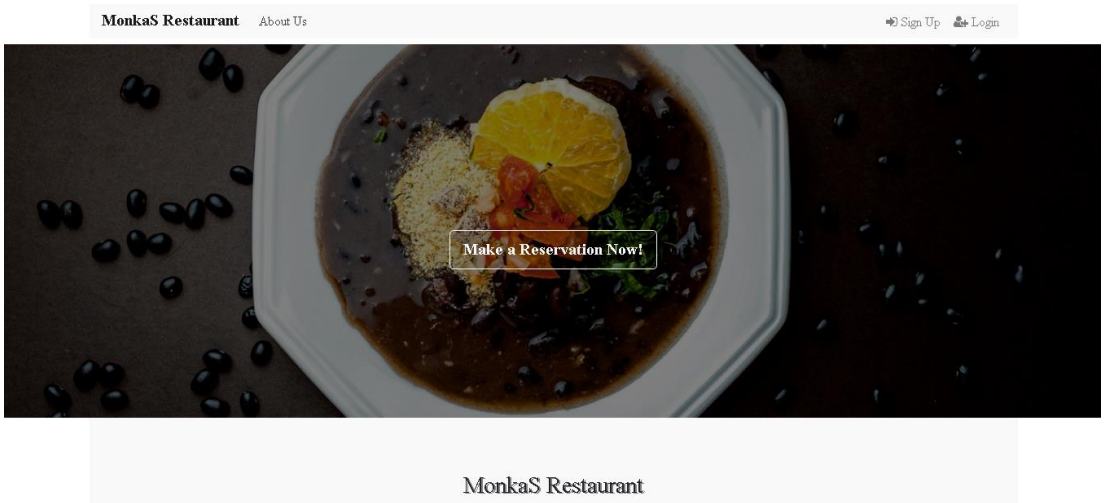



Figure 5-1: Home Page

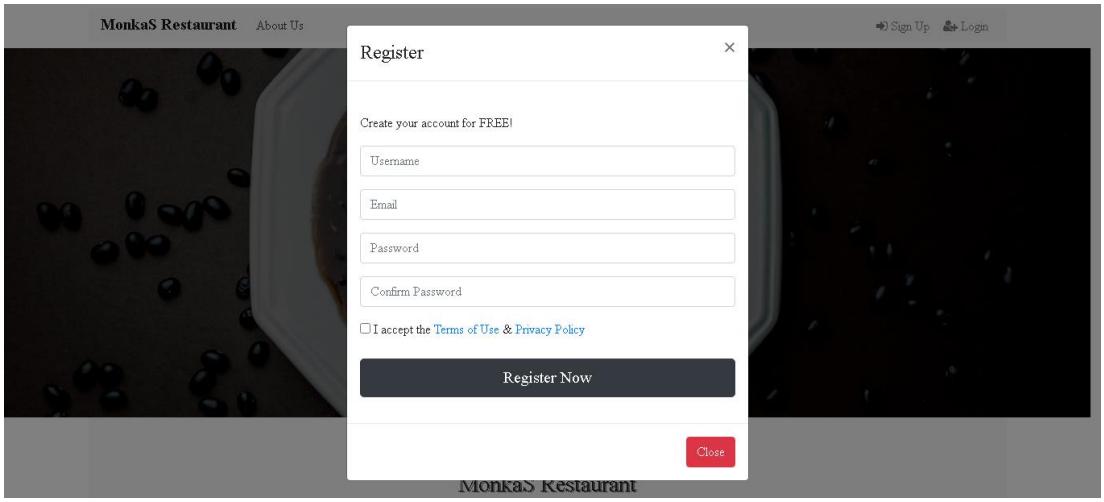



Figure 5-2: Account Sign-Up Modal

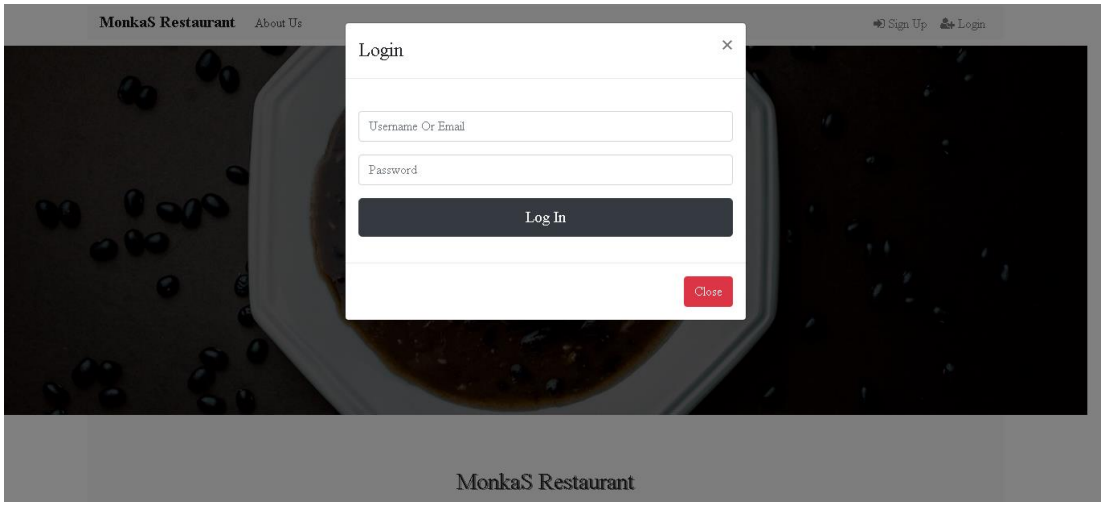



Figure 5-3: Account Login Modal

### 5.2.2 New Reservation Screen – Table Booking

Figure 5-4 shows that the error message when users attempt to make a reservation without logging in their account.

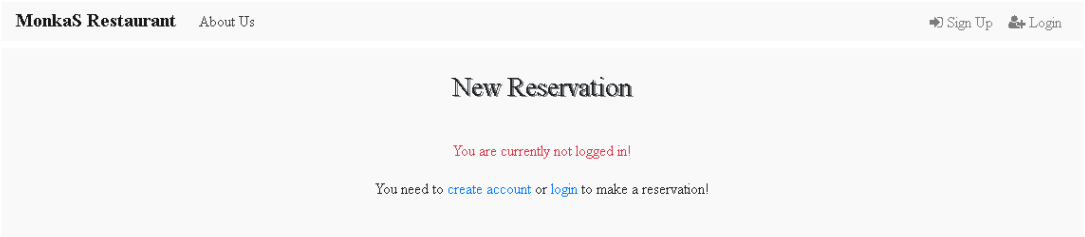



Figure 5-4: Error Message in New Reservation Screen

Figure 5-5 shows the table booking page after users or admins successfully login to the system.

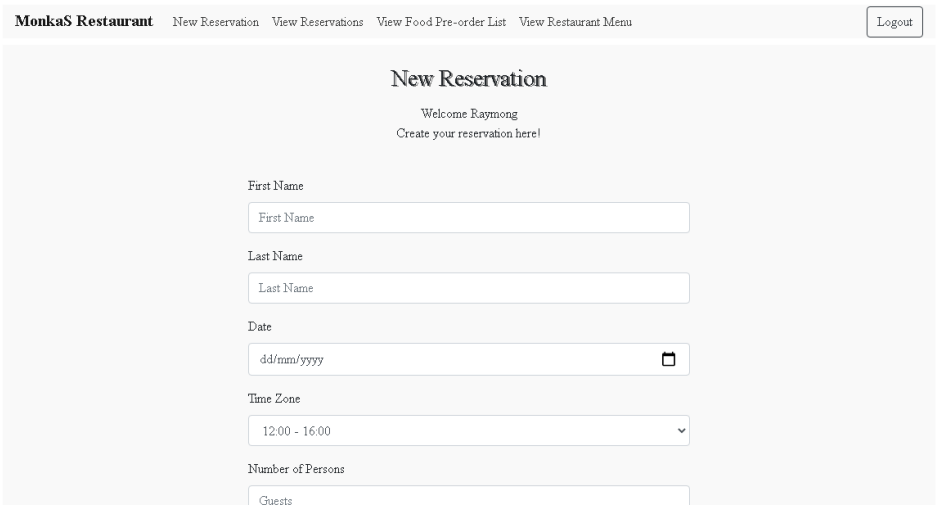



Figure 5-5: New Reservation Screen

### 5.2.3 View Reservation Screen

Figure 5-6 shows the view reservation page, where users, which are diners or customers are able to view and modify the details of reservation they made in this page, as well as to cancel their reservation.

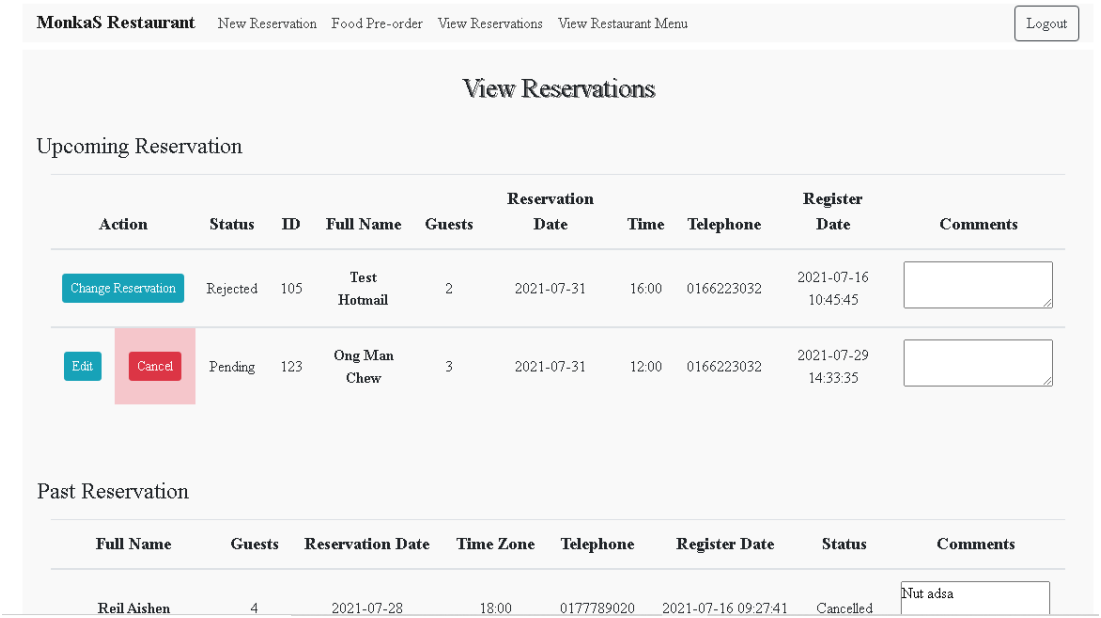



Figure 5-6: View Reservation Screen - Diners/Customers

Figure 5-7 shows the view reservation page, where admin has the ability to view, modify, print and export all the customers' reservation record, as well as to confirm or reject the reservation ("Pending" status).

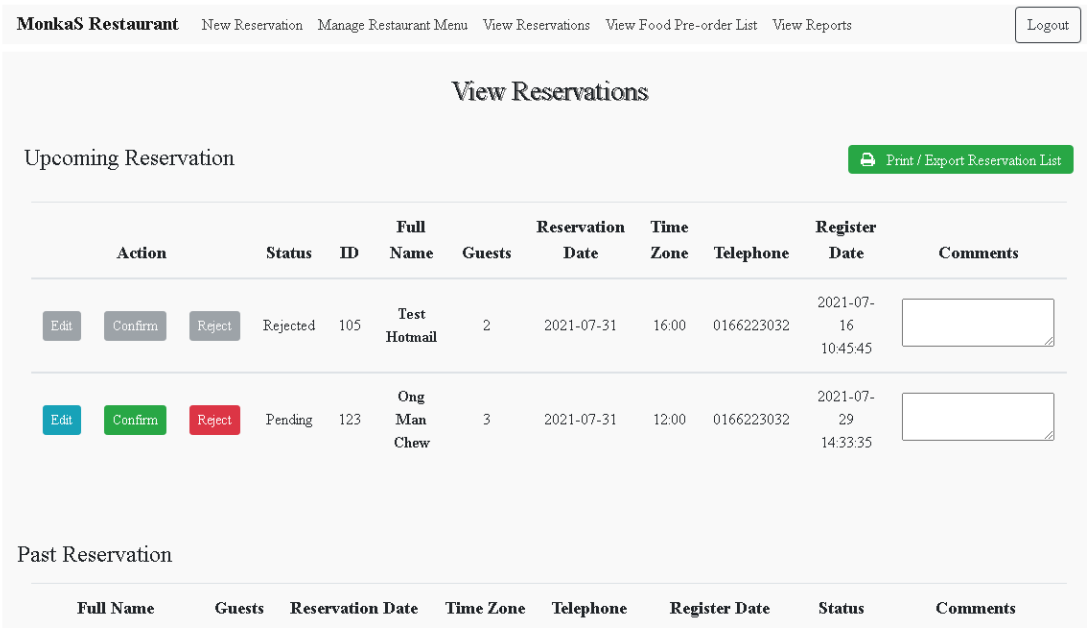



Figure 5-7: View Reservation Screen - Admin

### 5.2.4 Print/Export Reservation Modal

Figure 5-8 shows the modal that allows admin to export either all reservation records or upcoming reservation with status "Confirmed" to either Excel file or PDF file.

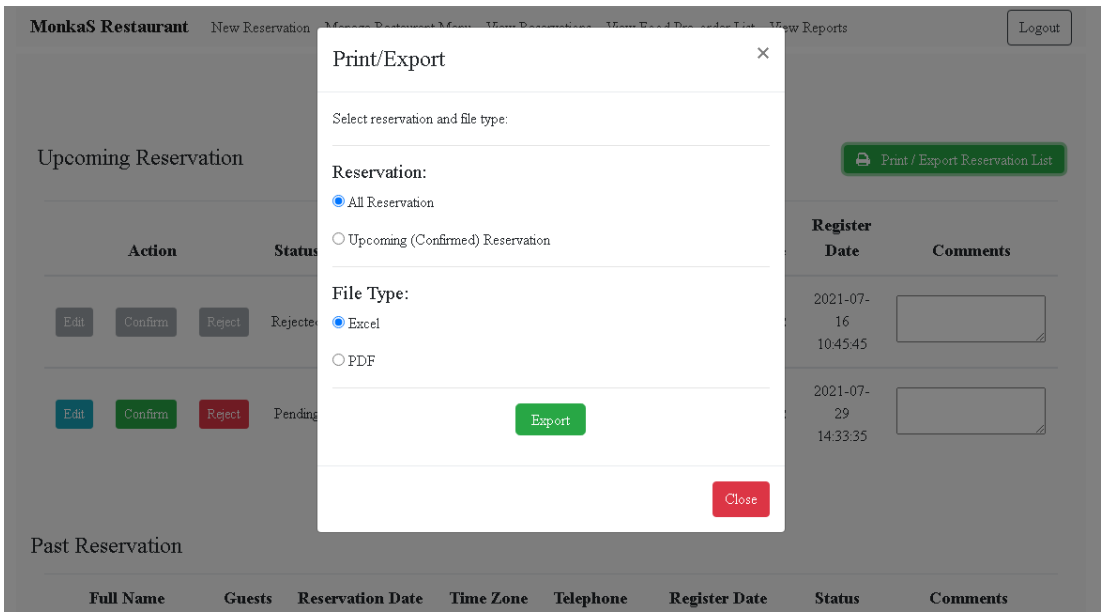



Figure 5-8: Print/Export Reservation Modal

### 5.2.5 Food Pre-Order Screen

Figure 5-9 shows the upcoming reservations list for customers to view, edit, and pre-order food for the selected reservation. For admin section, admin is able to view all the customers food pre-order list in all customers' reservation, as shown in figure 5-10. In Food Pre-order module, customers are able to only view, edit and pre-order food in their own reservation, while admin is authorized to perform view, edit and pre-order food in all the reservation. If reservation status is either rejected or cancelled, no action is allowed to be performed by customers, while admin can only view the food pre-order list.

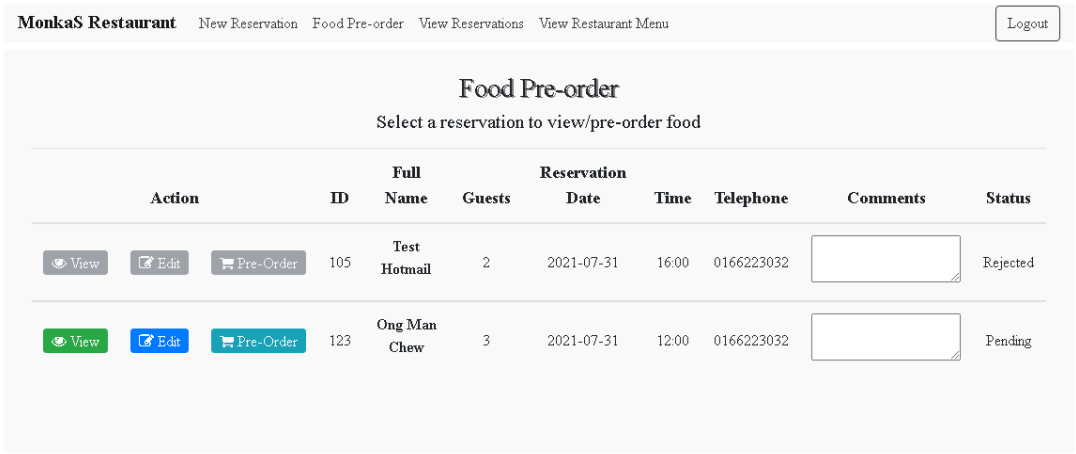



Figure 5-9: Upcoming Reservation List for Food Pre-Order Screen Diners/Customers

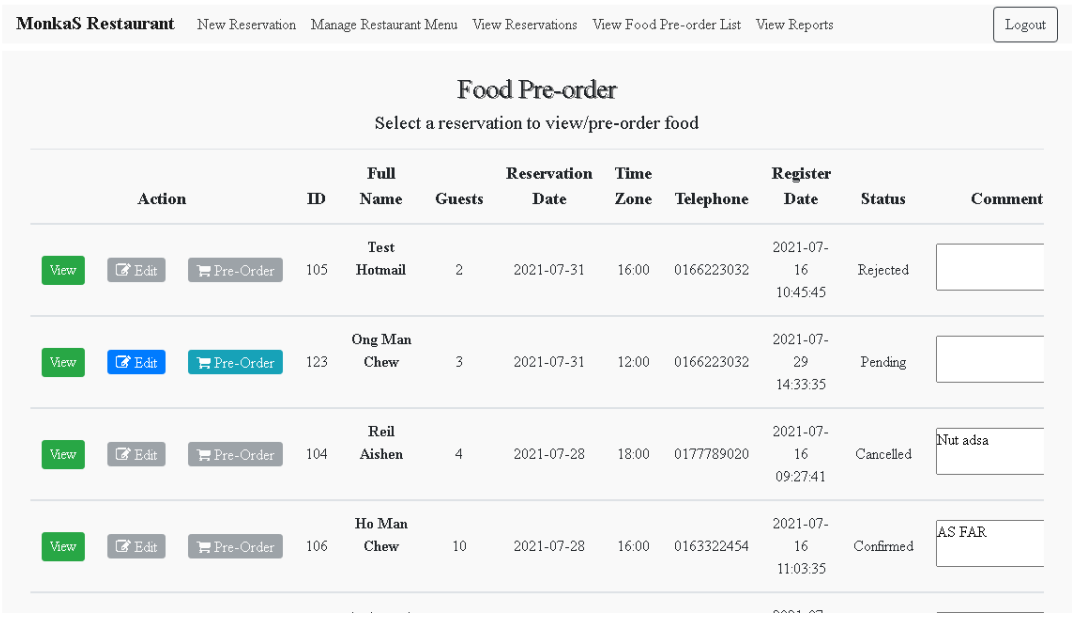



Figure 5-10: Upcoming Reservation List for Food Pre-Order Screen – Admin

Figure 5-11 shows the screen which the specific reservation with identification number 123 does not have any pre-ordered food. The green button "Pre-Order Food Now!" will redirect customers to screen as shown in figure 5-12.

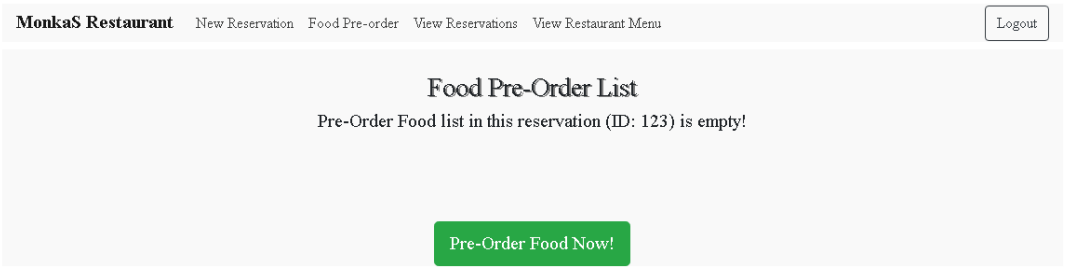



Figure 5-11: Food Pre-Order List in Reservation (Empty List)

Figure 5-12 shows the food pre-ordering screen, where customers are able to pre-order food for reservation selected by customers.

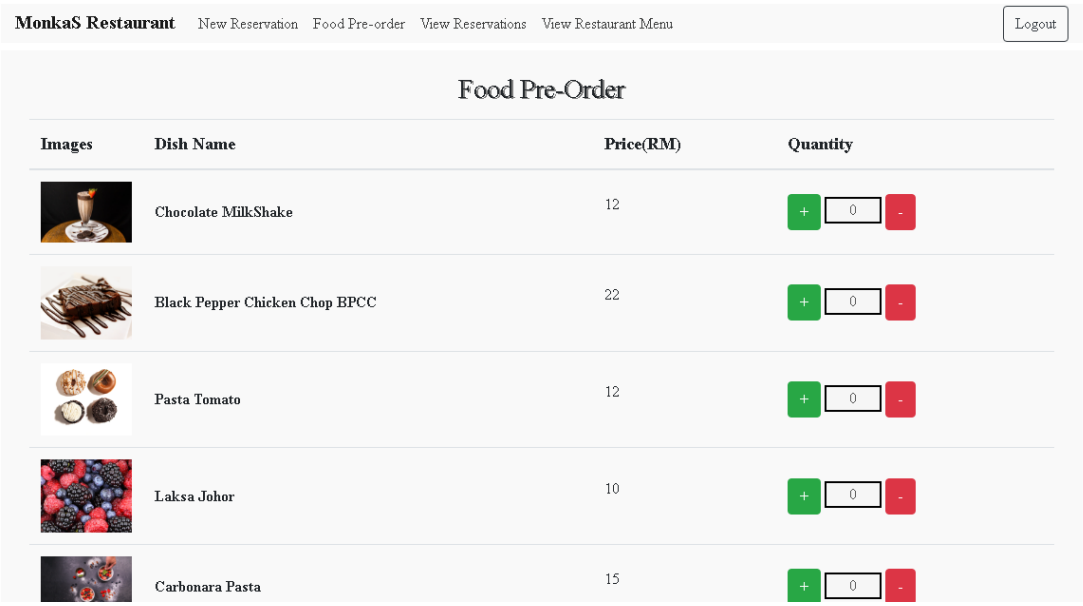



Figure 5-12: Food Pre-Ordering Screen - Diners/Customers

Figure 5-13 shows the order summary at the bottom of the screen shown in figure 5-12. The order summary will show all the dishes selected by customers as well as calculate the grand total price. Customers are able to complete food pre-ordering by clicking the green button "Checkout".

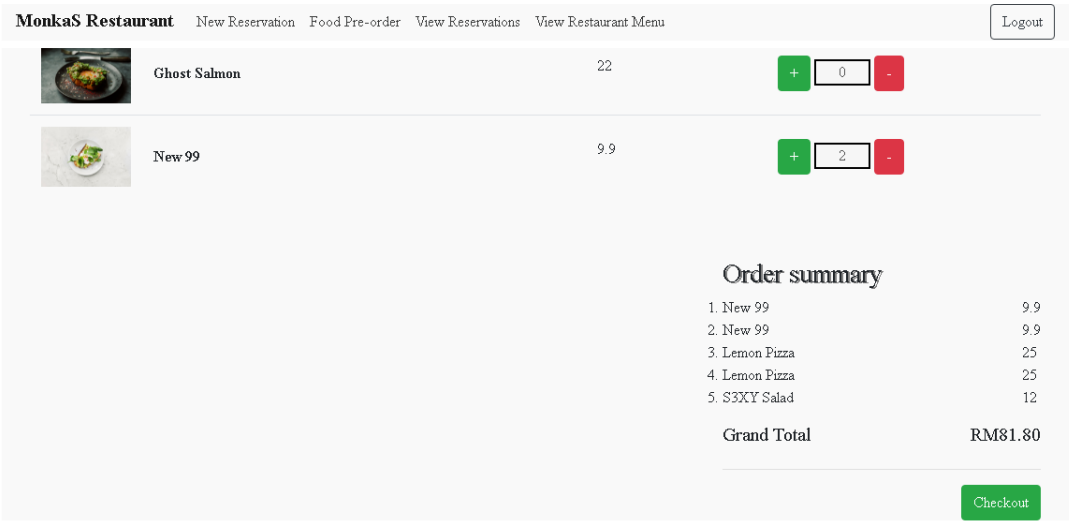



Figure 5-13: Order Summary in Food Pre-Ordering Screen

Figure 5-14 shows the food pre-order list in a specific reservation. Customers are able the view all the food they pre-ordered for the selected reservation, as well as edit the food pre-order list by clicking the green button on the left top corner of the screen.

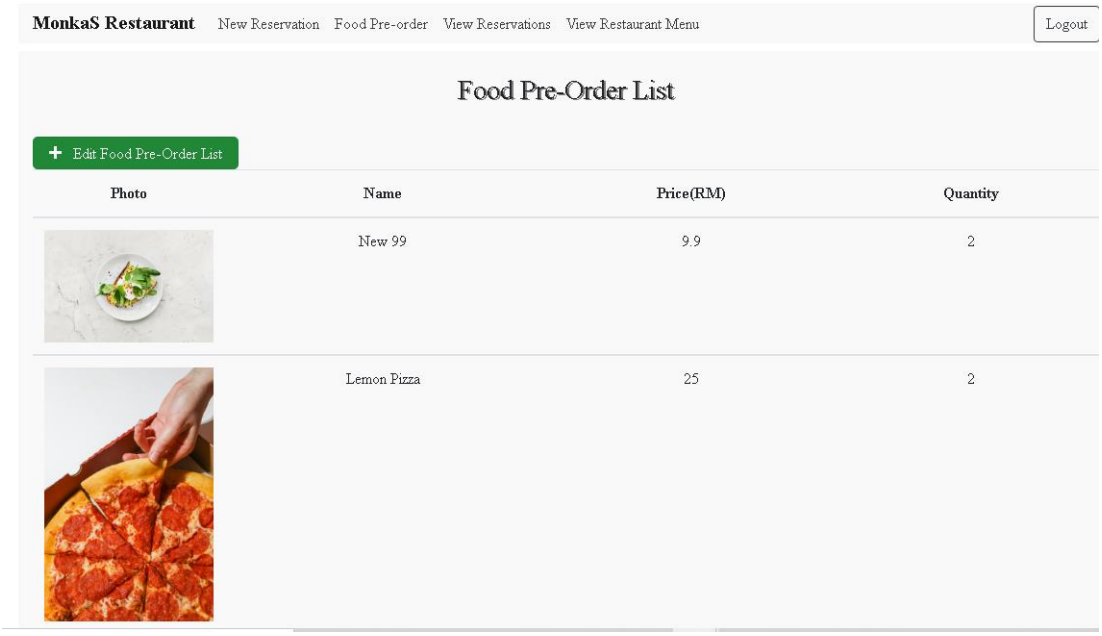



Figure 5-14: Food Pre-Order List in Reservation Screen

Figure 5-15 shows the screen where customers and admin are able to edit pre-ordered food list by adding or removing existing food by 1 quantity. Customers and admin are able to add new dish, which is not in the food pre-order list by clicking the green button on the left top corner of the screen.

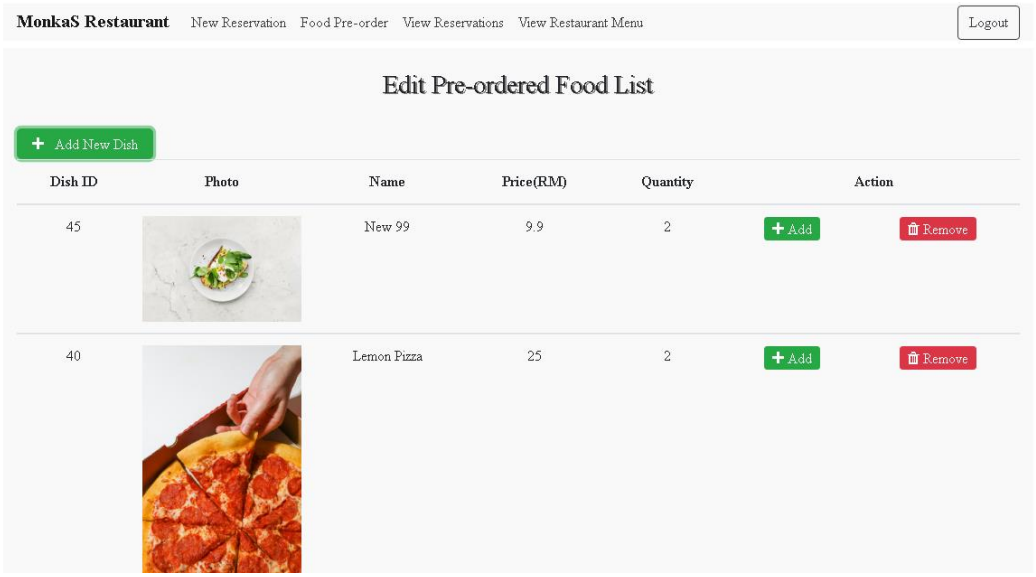



Figure 5-15: Edit Pre-ordered Food List Screen

Figure 5-16 shows the modal for customers and admin to add new dish, which is not in the food pre-order list. After clicking the green button on the left top corner of the screen in figure 5-15, the modal is shown, then customers and admin are allowed to add dishes, which is the same process as food pre-ordering in screen as shown in figure 5-12.

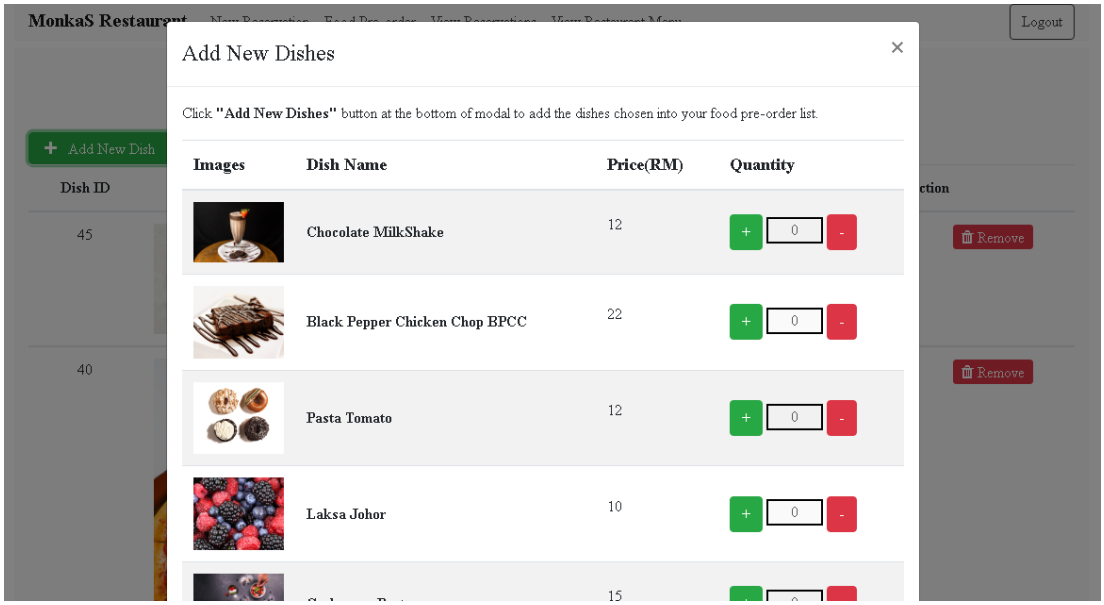



Figure 5-16: Add New Dish into Pre-ordered Food List Modal

### 5.2.6 View Restaurant Menu Screen

Figure 5-17 shows the restaurant menu screen, where customers are allowed to view all the "active" dishes. Customers are able to view dishes based on dish category.

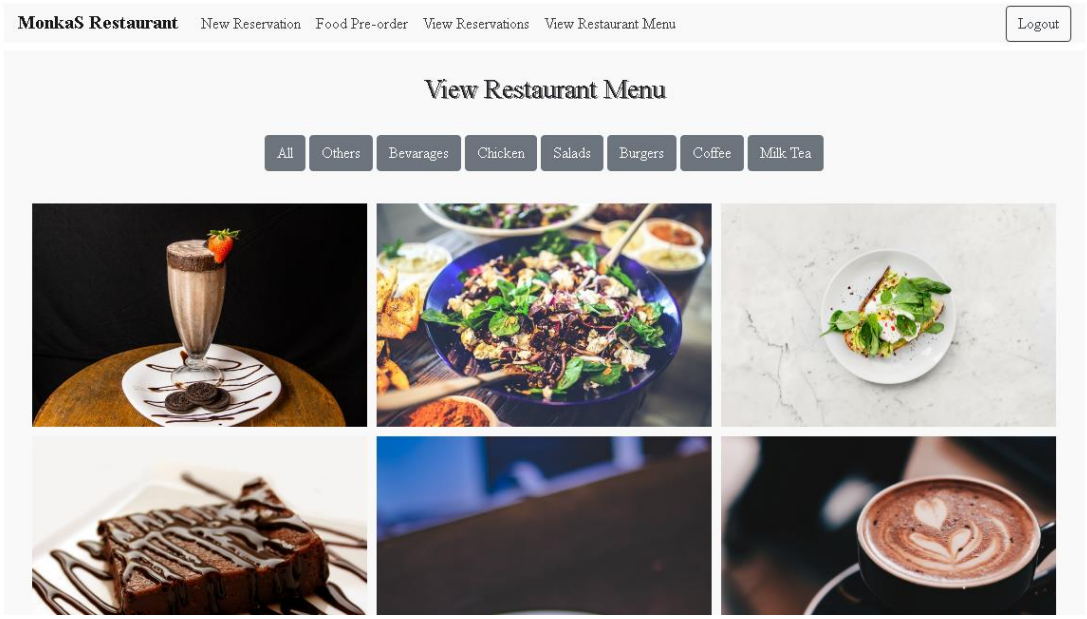



Figure 5-17: View Restaurant Menu Screen

### 5.2.7 View Restaurant Menu Screen

Figure 5-18 shows the restaurant menu management screen, where admin is able to perform several actions on dish records. The actions include activate or deactivate dish, edit dish's details, change dish photo, add new dish, add and remove new dish category.

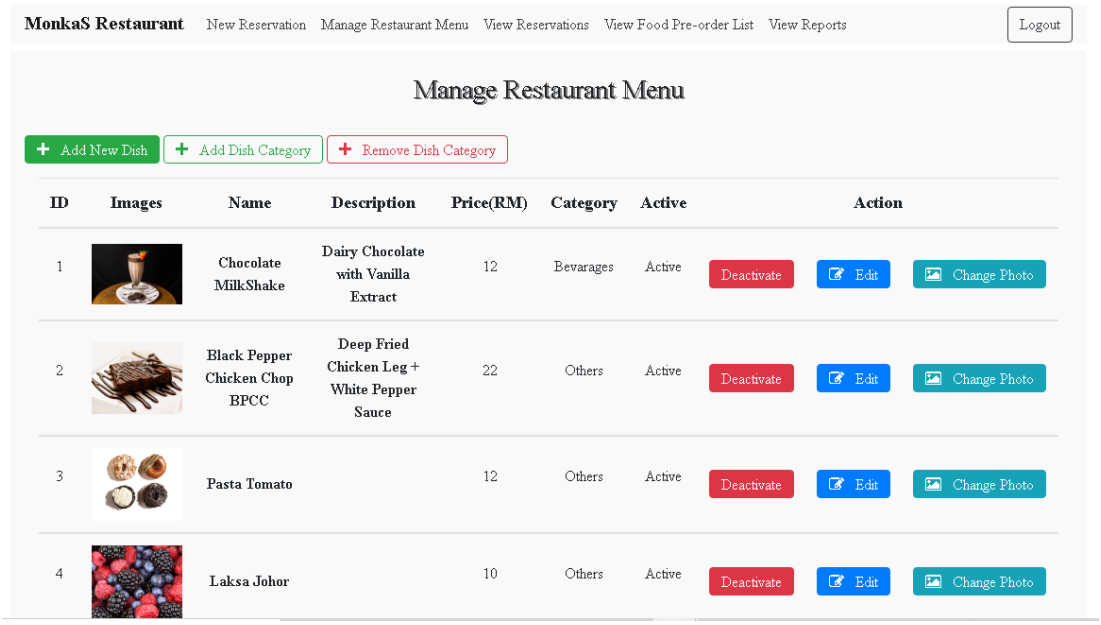



Figure 5-18: Manage Restaurant Menu Screen - Admin

Figure 5-19 shows the "New Dish" modal for admin to create new dish for restaurant menu. When admin clicks the green button "Add Dish Category", the "New Dish Category" modal will appear as shown in figure 5-20.

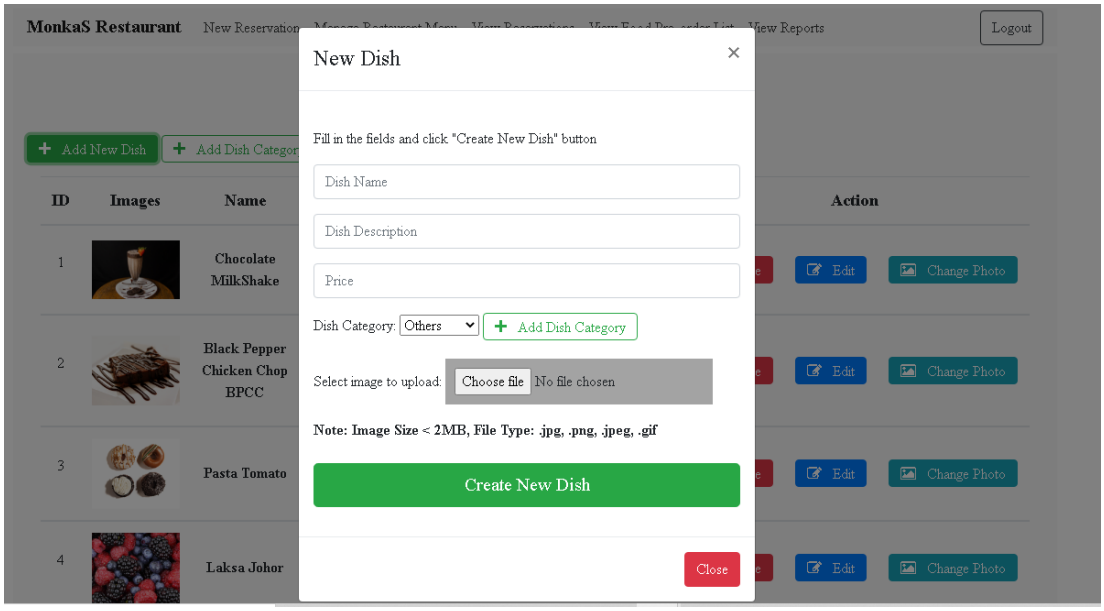



Figure 5-19: Create New Dish Modal in Restaurant Menu Management Screen – Admin

Figure 5-20 shows the "New Dish Category" modal for admin to create new dish category.

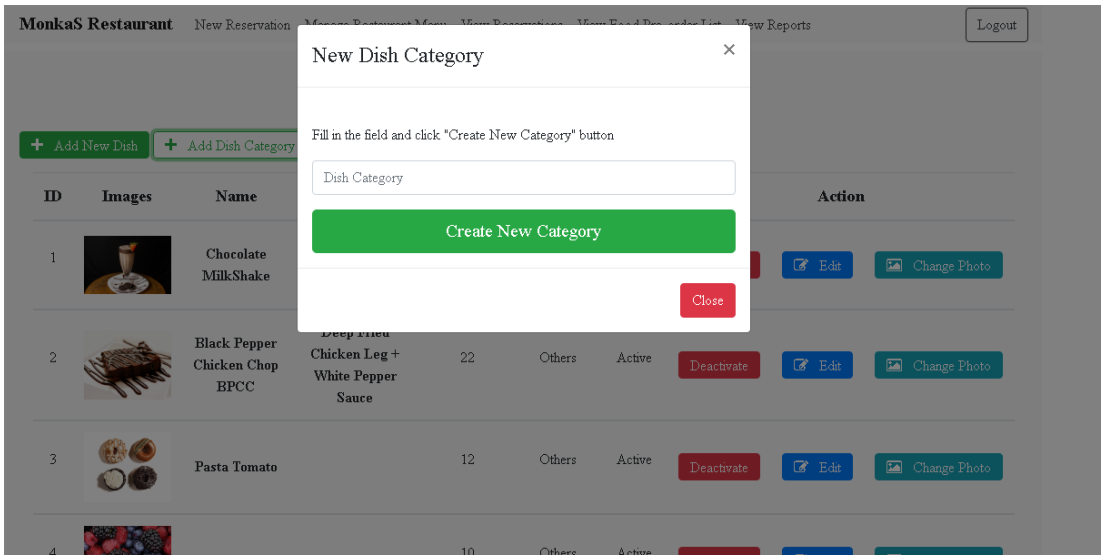



Figure 5-20: Create New Dish Category Modal in Restaurant Menu Management Screen – Admin

Figure 5-21 shows the “Remove Dish Category” modal for admin to select a dish category to remove dish category.

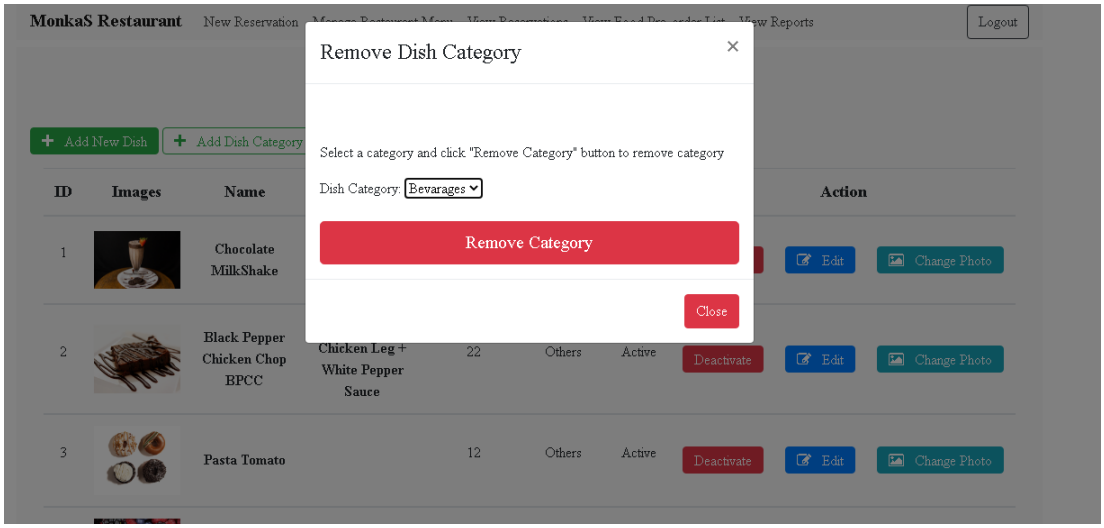



Figure 5-21: Remove Dish Category Modal in Restaurant Menu Management Screen – Admin

Figure 5-22 shows the “Edit Dish” modal for admin to edit details of dish.

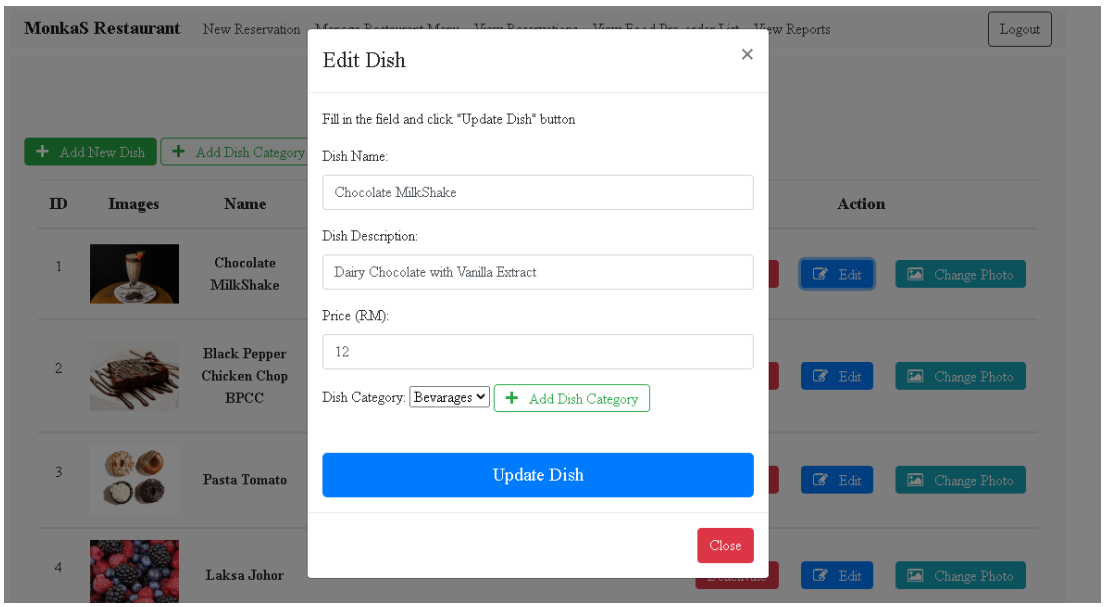



Figure 5-22: Edit Dish modal in Restaurant Menu Management Screen – Admin

Figure 5-23 shows the "Change Dish Photo" modal for admin to change the selected dish's photo. The image size must be less than 2 Megabytes (MB). The file type must be an image file such as .jpg, .png, .jpeg, and .gif.

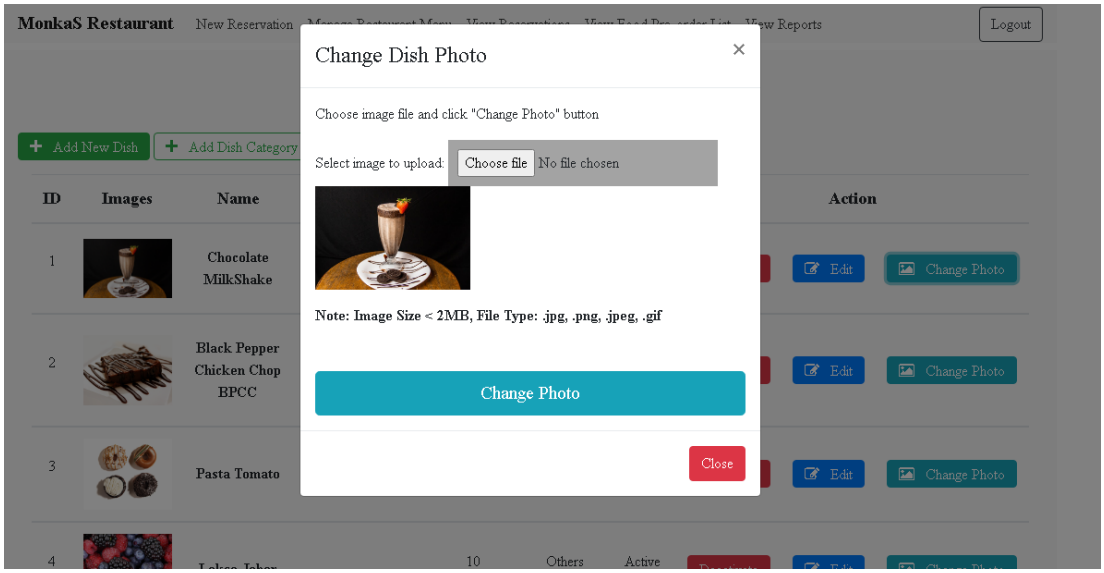



Figure 5-23: Change Dish Photo Modal in Restaurant Menu Management Screen – Admin

### 5.2.8 View Reports Screen

Figure 5-24 and figure 5-25 show the view reports screens, where admin is able to select two different reports which are table booking frequency report and most popular dish report.

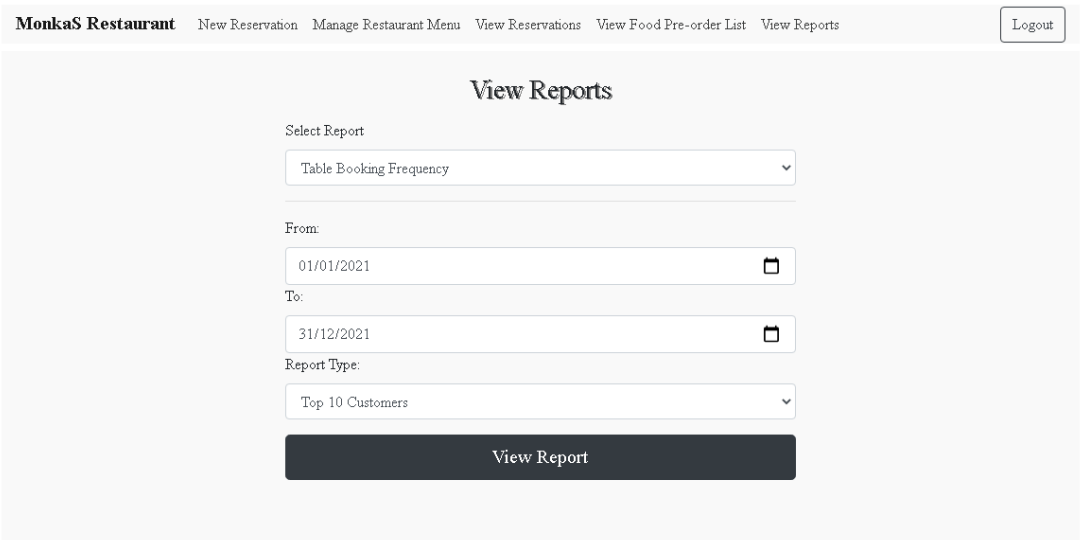



Figure 5-24: View Report Screen - Admin Selects Table Booking Frequency Report

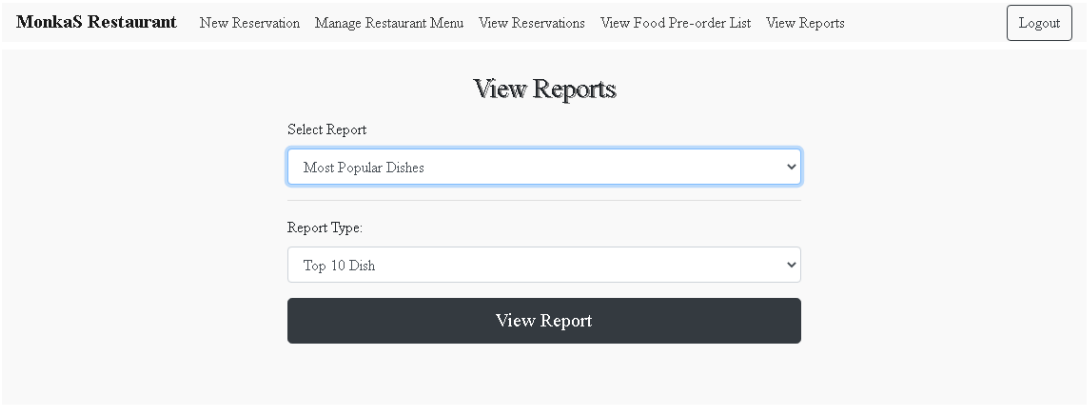
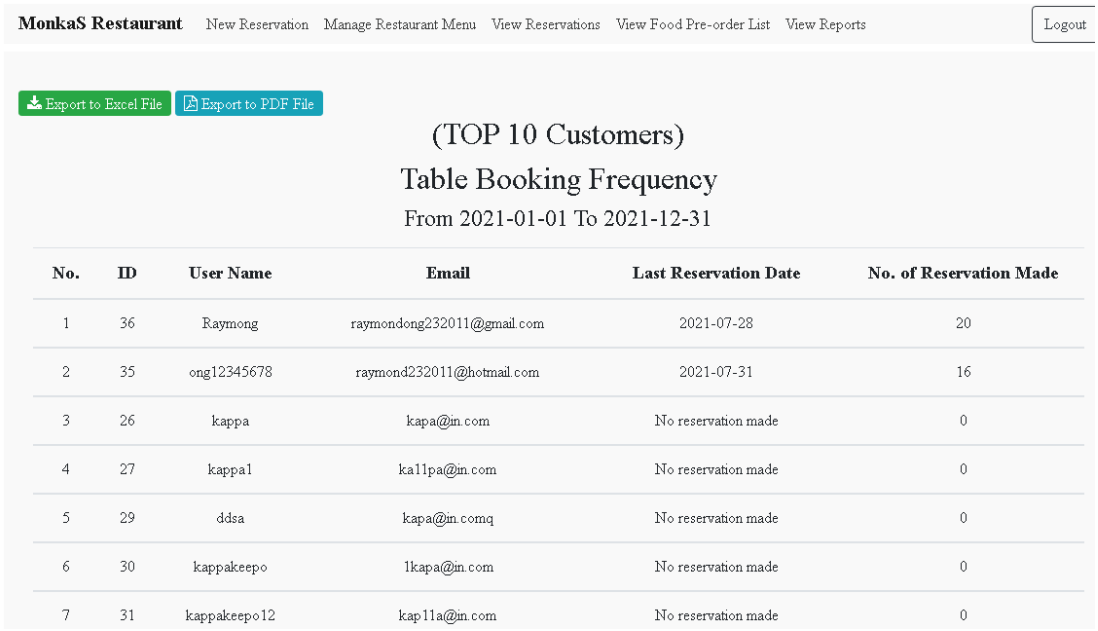



Figure 5-25:View Report Screen - Admin Selects Most Popular Dish Report

Figure 5-26 and figure 5-27 show the result of the report after admin clicks the "View Report" button in figure 5-24 and figure 5-25 respectively.




| No. | ID | User Name | Email | Last Reservation Date | No. of Reservation Made |
|---|---|---|---|---|---|
| 1 | 36 | Raymong | raymondong232011@gmail.com | 2021-07-28 | 20 |
| 2 | 35 | ong12345678 | raymond232011@hotmail.com | 2021-07-31 | 16 |
| 3 | 26 | kappa | kapa@in.com | No reservation made | 0 |
| 4 | 27 | kappa1 | ka11pa@in.com | No reservation made | 0 |
| 5 | 29 | ddsa | kapa@in.comq | No reservation made | 0 |
| 6 | 30 | kappakeepo | 1kapa@in.com | No reservation made | 0 |
| 7 | 31 | kappakeepo12 | kap11a@in.com | No reservation made | 0 |

Figure 5-26: Top 10 Customers Table Booking Frequency Report – Admin

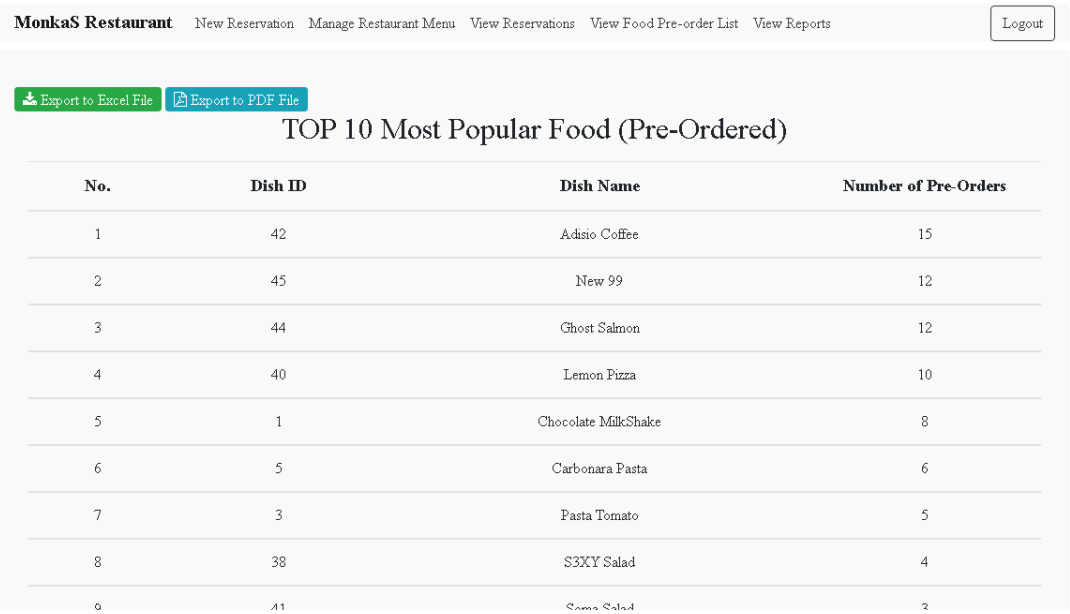



Figure 5-27: Top 10 Most Popular Food (Pre-Ordered) – Admin

### 5.2.9 Export Reports Screen (PDF Format)

Figure 5-28 and figure 5-29 show the "Top 10 Customers Table Booking Frequency" report and "Top 10 Most Popular Dish (Pre-Ordered)" after exporting to pdf file.

**(TOP 10 Customers)**

**Table Booking Frequency**

**From 2021-01-01 To 2021-12-31**

| No. | ID | User Name | Email | Last Reserv. Date | No. of Reserv |
|---|---|---|---|---|---|
| 1 | 36 | Raymong | raymondong232011@gmail.com | 2021-07-28 | 20 |
| 2 | 35 | ong12345678 | raymond232011@hotmail.com | 2021-07-31 | 16 |
| 3 | 26 | kappa | kapa@in.com | No reservation made | 0 |
| 4 | 27 | kappa1 | ka11pa@in.com | No reservation made | 0 |
| 5 | 29 | ddsa | kapa@in.comq | No reservation made | 0 |
| 6 | 30 | kappakeepo | 1kapa@in.com | No reservation made | 0 |
| 7 | 31 | kappakeepo12 | kap11a@in.com | No reservation made | 0 |
| 8 | 32 | fwtis | kappa1@in.gr | No reservation made | 0 |
| 9 | 33 | kopelitsoua | effgfdgfdg@hotmail.com | No reservation made | 0 |
| 10 | 34 | lolas | lolas@in.gr | No reservation made | 0 |
| | | | | Total: | 36 |

Figure 5-28: Top 10 Customers Table Booking Frequency PDF File Format - Admin

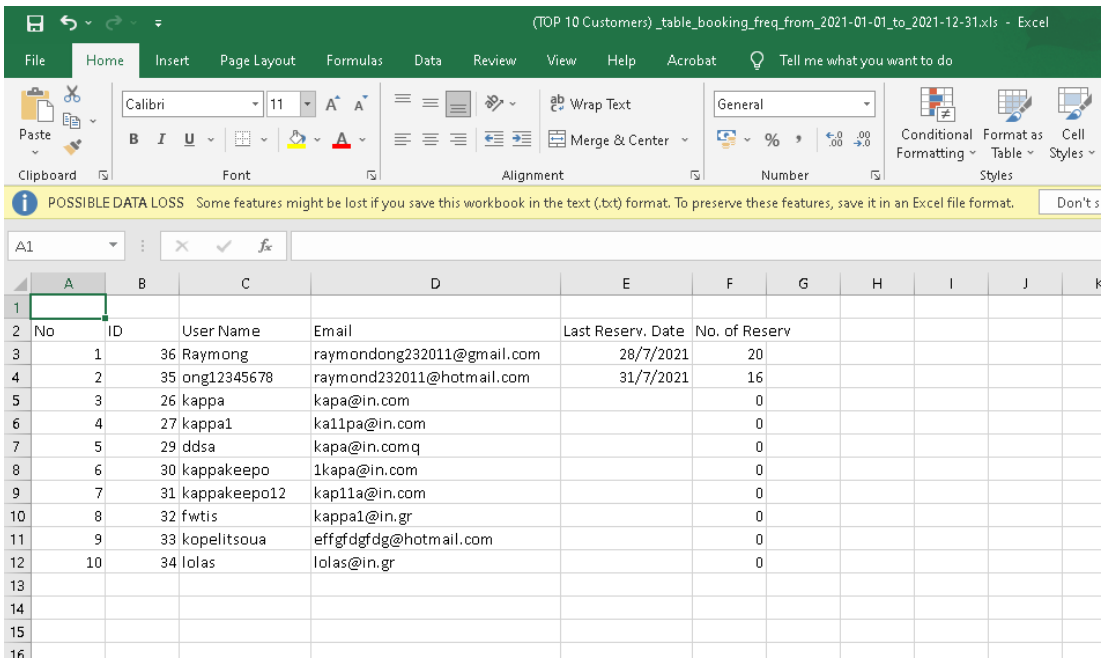
**TOP 10 Most Popular Dish (Pre-Ordered)**

| No. | Dish ID | Dish Name | No. of Pre-Orders |
|---|---|---|---|
| 1 | 42 | Adisio Coffee | 15 |
| 2 | 45 | New 99 | 12 |
| 3 | 44 | Ghost Salmon | 12 |
| 4 | 40 | Lemon Pizza | 10 |
| 5 | 1 | Chocolate MilkShake | 8 |
| 6 | 5 | Carbonara Pasta | 6 |
| 7 | 3 | Pasta Tomato | 5 |
| 8 | 38 | S3XY Salad | 4 |
| 9 | 41 | Soma Salad | 3 |
| 10 | 6 | Ramly Burger | 2 |

Figure 5-29: Top 10 Most Popular Dish (Pre-Ordered) PDF File Format – Admin

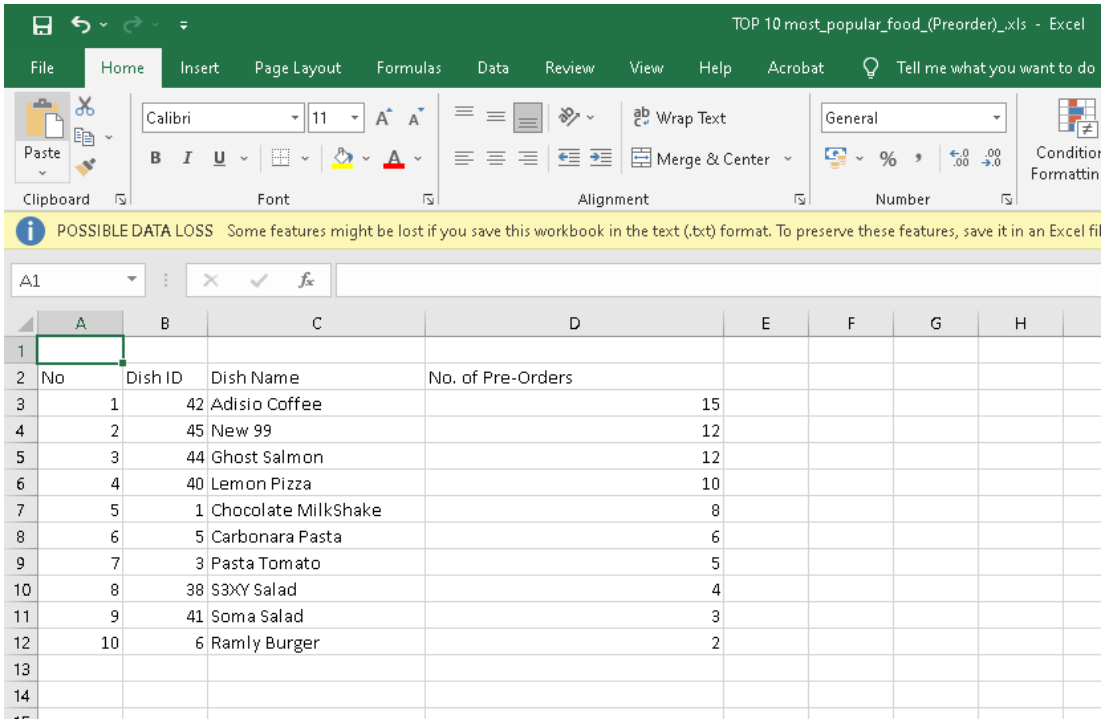
### 5.2.10 Export Reports Screen (Excel Format)

Figure 5-30 and figure 5-31 show the "Top 10 Customers Table Booking Frequency" report and "Top 10 Most Popular Dish (Pre-Ordered)" after exporting to excel file.




| | A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | |
| 2 | No | ID | User Name | Email | Last Reserv. Date | No. of Reserv | | | | |
| 3 | 1 | 36 | Raymong | raymondong232011@gmail.com | 28/7/2021 | 20 | | | | |
| 4 | 2 | 35 | ong12345678 | raymond232011@hotmail.com | 31/7/2021 | 16 | | | | |
| 5 | 3 | 26 | kappa | kapa@in.com | | 0 | | | | |
| 6 | 4 | 27 | kappa1 | ka11pa@in.com | | 0 | | | | |
| 7 | 5 | 29 | ddsa | kapa@in.comq | | 0 | | | | |
| 8 | 6 | 30 | kappakeepo | 1kapa@in.com | | 0 | | | | |
| 9 | 7 | 31 | kappakeepo12 | kap11a@in.com | | 0 | | | | |
| 10 | 8 | 32 | fwtis | kappa1@in.gr | | 0 | | | | |
| 11 | 9 | 33 | kopelitsoua | effgfdgfdg@hotmail.com | | 0 | | | | |
| 12 | 10 | 34 | lolas | lolas@in.gr | | 0 | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |

Figure 5-30: Top 10 Customers Table Booking Frequency Excel File Format - Admin

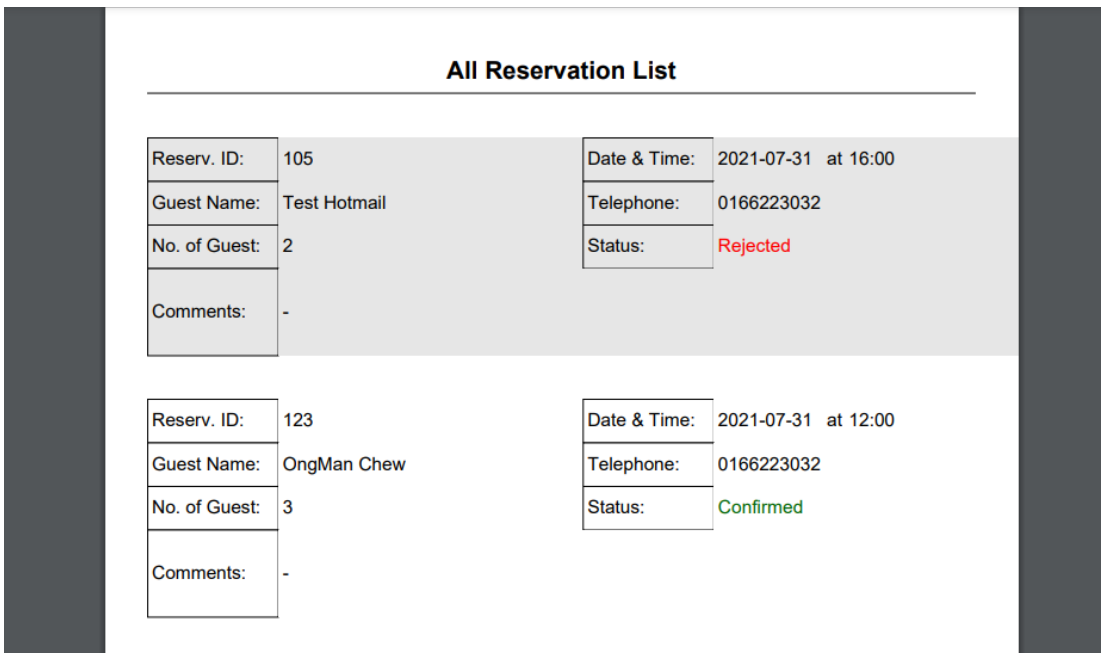



| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |
| 2 | No | Dish ID | Dish Name | No. of Pre-Orders | | | | |
| 3 | 1 | 42 | Adisio Coffee | 15 | | | | |
| 4 | 2 | 45 | New 99 | 12 | | | | |
| 5 | 3 | 44 | Ghost Salmon | 12 | | | | |
| 6 | 4 | 40 | Lemon Pizza | 10 | | | | |
| 7 | 5 | 1 | Chocolate MilkShake | 8 | | | | |
| 8 | 6 | 5 | Carbonara Pasta | 6 | | | | |
| 9 | 7 | 3 | Pasta Tomato | 5 | | | | |
| 10 | 8 | 38 | S3XY Salad | 4 | | | | |
| 11 | 9 | 41 | Soma Salad | 3 | | | | |
| 12 | 10 | 6 | Ramly Burger | 2 | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |

Figure 5-31: Top 10 Most Popular Dish (Pre-Ordered) Excel File Format – Admin

### 5.2.11 Export Reservation List Screen (Both PDF and Excel Format)

Figure 5-32 shows the pdf file that contains all reservations records, including upcoming and past reservations.



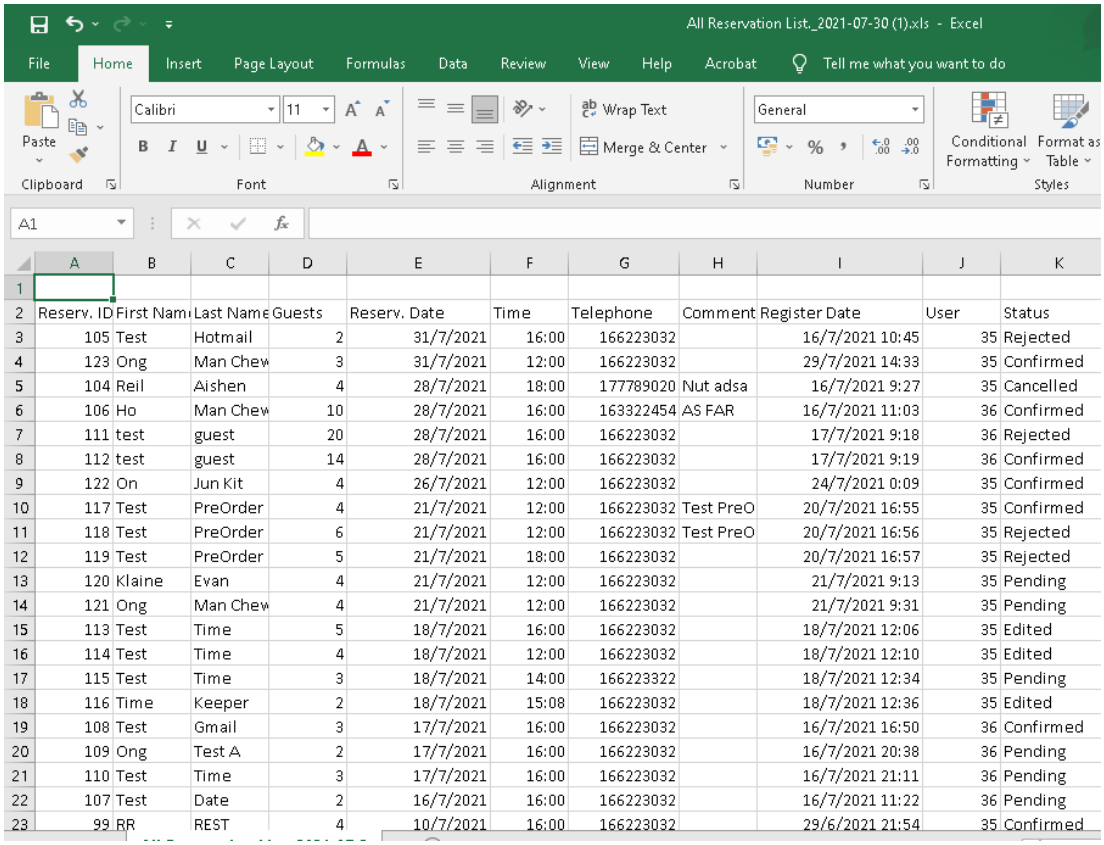
**All Reservation List**

| | | | |
|---|---|---|---|
| Reserv. ID: | 105 | Date & Time: | 2021-07-31 at 16:00 |
| Guest Name: | Test Hotmail | Telephone: | 0166223032 |
| No. of Guest: | 2 | Status: | Rejected |
| Comments: | - | | |

| | | | |
|---|---|---|---|
| Reserv. ID: | 123 | Date & Time: | 2021-07-31 at 12:00 |
| Guest Name: | OngMan Chew | Telephone: | 0166223032 |
| No. of Guest: | 3 | Status: | Confirmed |
| Comments: | - | | |

Figure 5-32: All Reservation List in PDF Format – Admin

Figure 5-33 shows the excel file that contains all reservations records.



All Reservation List_2021-07-30 (1).xls - Excel

| | Reserv. ID | First Nam | Last Name | Guests | Reserv. Date | Time | Telephone | Comment | Register Date | User | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 105 | Test | Hotmail | 2 | 31/7/2021 | 16:00 | 166223032 | | 16/7/2021 10:45 | 35 | Rejected |
| 4 | 123 | Ong | Man Chew | 3 | 31/7/2021 | 12:00 | 166223032 | | 29/7/2021 14:33 | 35 | Confirmed |
| 5 | 104 | Reil | Aishen | 4 | 28/7/2021 | 18:00 | 177789020 | Nut adsa | 16/7/2021 9:27 | 35 | Cancelled |
| 6 | 106 | Ho | Man Chew | 10 | 28/7/2021 | 16:00 | 163322454 | AS FAR | 16/7/2021 11:03 | 36 | Confirmed |
| 7 | 111 | test | guest | 20 | 28/7/2021 | 16:00 | 166223032 | | 17/7/2021 9:18 | 36 | Rejected |
| 8 | 112 | test | guest | 14 | 28/7/2021 | 16:00 | 166223032 | | 17/7/2021 9:19 | 36 | Confirmed |
| 9 | 122 | On | Jun Kit | 4 | 26/7/2021 | 12:00 | 166223032 | | 24/7/2021 0:09 | 35 | Confirmed |
| 10 | 117 | Test | PreOrder | 4 | 21/7/2021 | 12:00 | 166223032 | Test PreO | 20/7/2021 16:55 | 35 | Confirmed |
| 11 | 118 | Test | PreOrder | 6 | 21/7/2021 | 12:00 | 166223032 | Test PreO | 20/7/2021 16:56 | 35 | Rejected |
| 12 | 119 | Test | PreOrder | 5 | 21/7/2021 | 18:00 | 166223032 | | 20/7/2021 16:57 | 35 | Rejected |
| 13 | 120 | Klaine | Evan | 4 | 21/7/2021 | 12:00 | 166223032 | | 21/7/2021 9:13 | 35 | Pending |
| 14 | 121 | Ong | Man Chew | 4 | 21/7/2021 | 12:00 | 166223032 | | 21/7/2021 9:31 | 35 | Pending |
| 15 | 113 | Test | Time | 5 | 18/7/2021 | 16:00 | 166223032 | | 18/7/2021 12:06 | 35 | Edited |
| 16 | 114 | Test | Time | 4 | 18/7/2021 | 12:00 | 166223032 | | 18/7/2021 12:10 | 35 | Edited |
| 17 | 115 | Test | Time | 3 | 18/7/2021 | 14:00 | 166223322 | | 18/7/2021 12:34 | 35 | Pending |
| 18 | 116 | Time | Keeper | 2 | 18/7/2021 | 15:08 | 166223032 | | 18/7/2021 12:36 | 35 | Edited |
| 19 | 108 | Test | Gmail | 3 | 17/7/2021 | 16:00 | 166223032 | | 16/7/2021 16:50 | 36 | Confirmed |
| 20 | 109 | Ong | Test A | 2 | 17/7/2021 | 16:00 | 166223032 | | 16/7/2021 20:38 | 36 | Pending |
| 21 | 110 | Test | Time | 3 | 17/7/2021 | 16:00 | 166223032 | | 16/7/2021 21:11 | 36 | Pending |
| 22 | 107 | Test | Date | 2 | 16/7/2021 | 16:00 | 166223032 | | 16/7/2021 11:22 | 36 | Pending |
| 23 | 99 | RR | REST | 4 | 10/7/2021 | 16:00 | 166223032 | | 29/6/2021 21:54 | 35 | Confirmed |

Figure 5-33: All Reservation List in Excel Format – Admin

Figure 5-34 shows the pdf file that contain upcoming confirmed reservation list.

**Upcoming (Confirmed) Reservation List**

| | | | |
|---|---|---|---|
| Reserv. ID: | 123 | Date & Time: | 2021-07-31 at 12:00 |
| Guest Name: | OngMan Chew | Telephone: | 0166223032 |
| No. of Guest: | 3 | Status: | Confirmed |
| Comments: | - | | |

Figure 5-34: Upcoming (Confirmed) Reservation List in PDF Format – Admin

Figure 5-35 shows the excel file that contain upcoming confirmed reservation list.

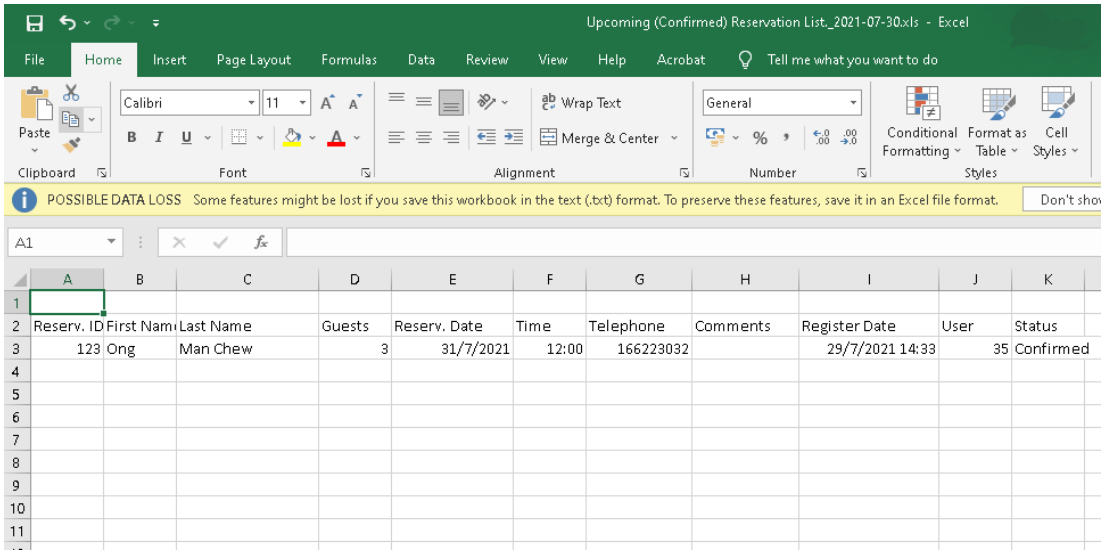



Figure 5-35: Upcoming (Confirmed) Reservation List in Excel Format – Admin

## 5.3 System Design Models

Activity diagrams were drawn to illustrate the relationship and interaction between users and restaurant reservation system.

### 5.3.1 Activity Diagram

#### 5.3.1.1 Login Account

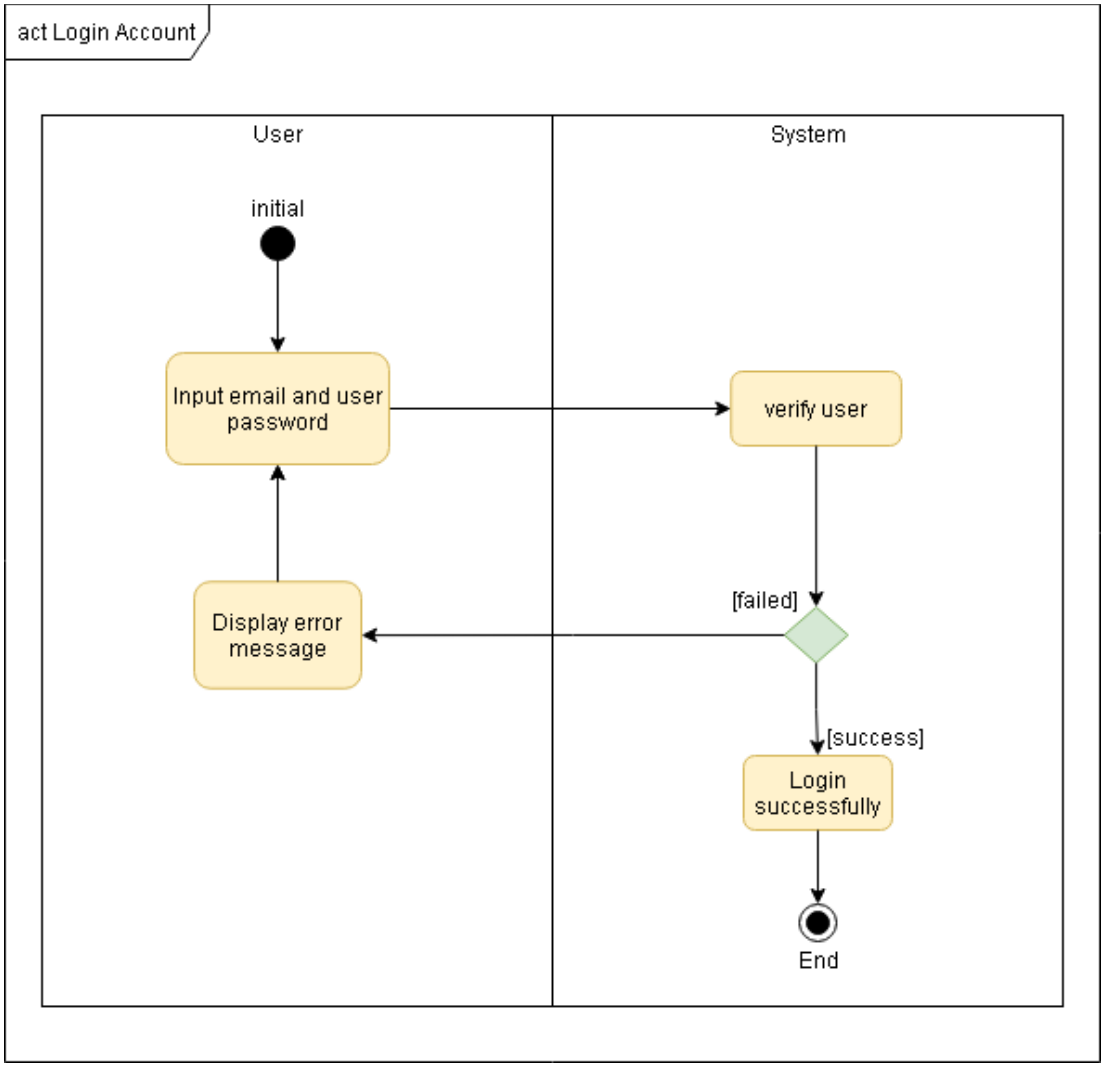



Figure 5-36: Activity Diagram - Login Account

### 5.3.1.2 Create Account

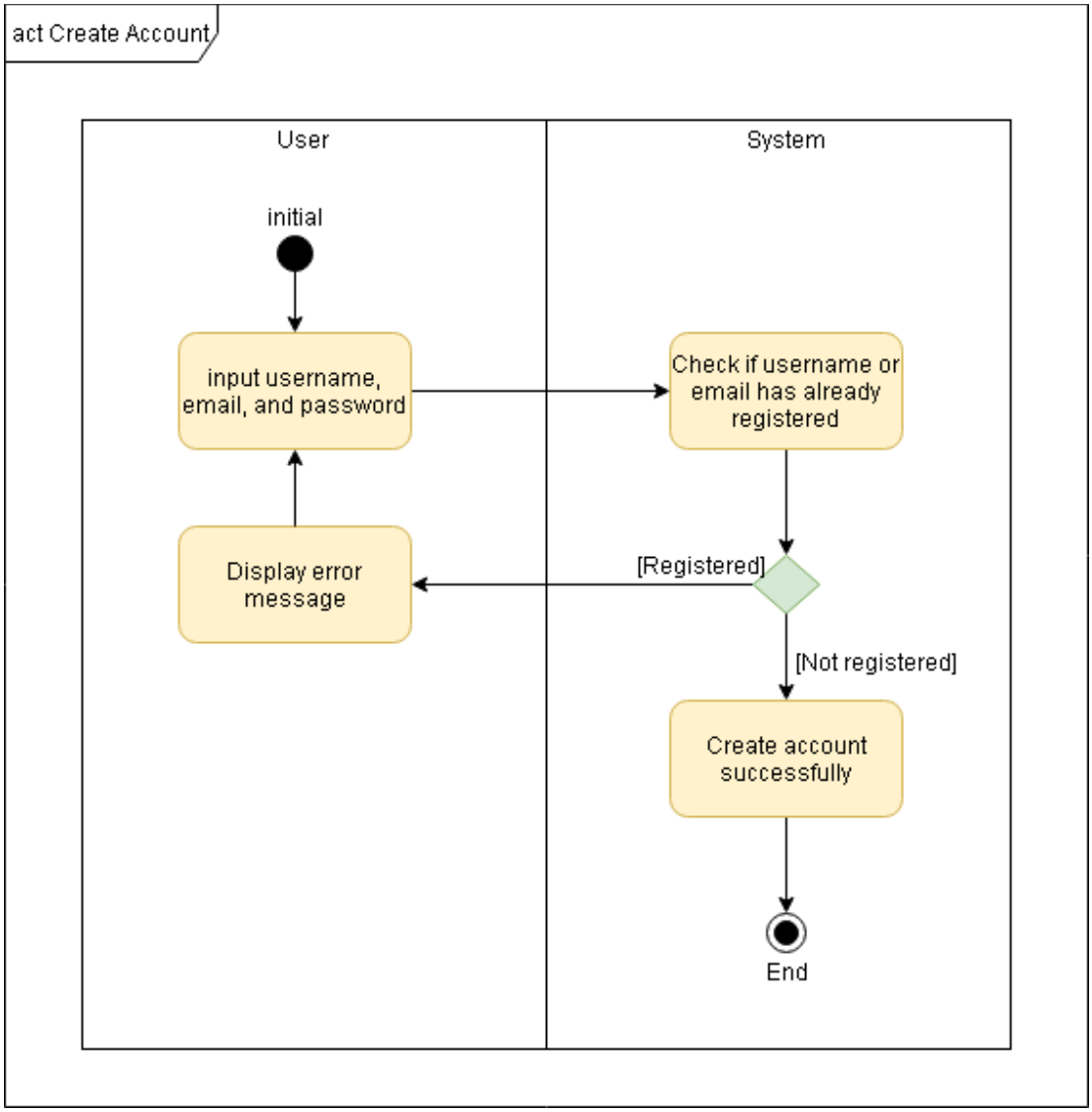



Figure 5-37: Activity Diagram - Create Account

#### 5.3.1.3 Make Reservation

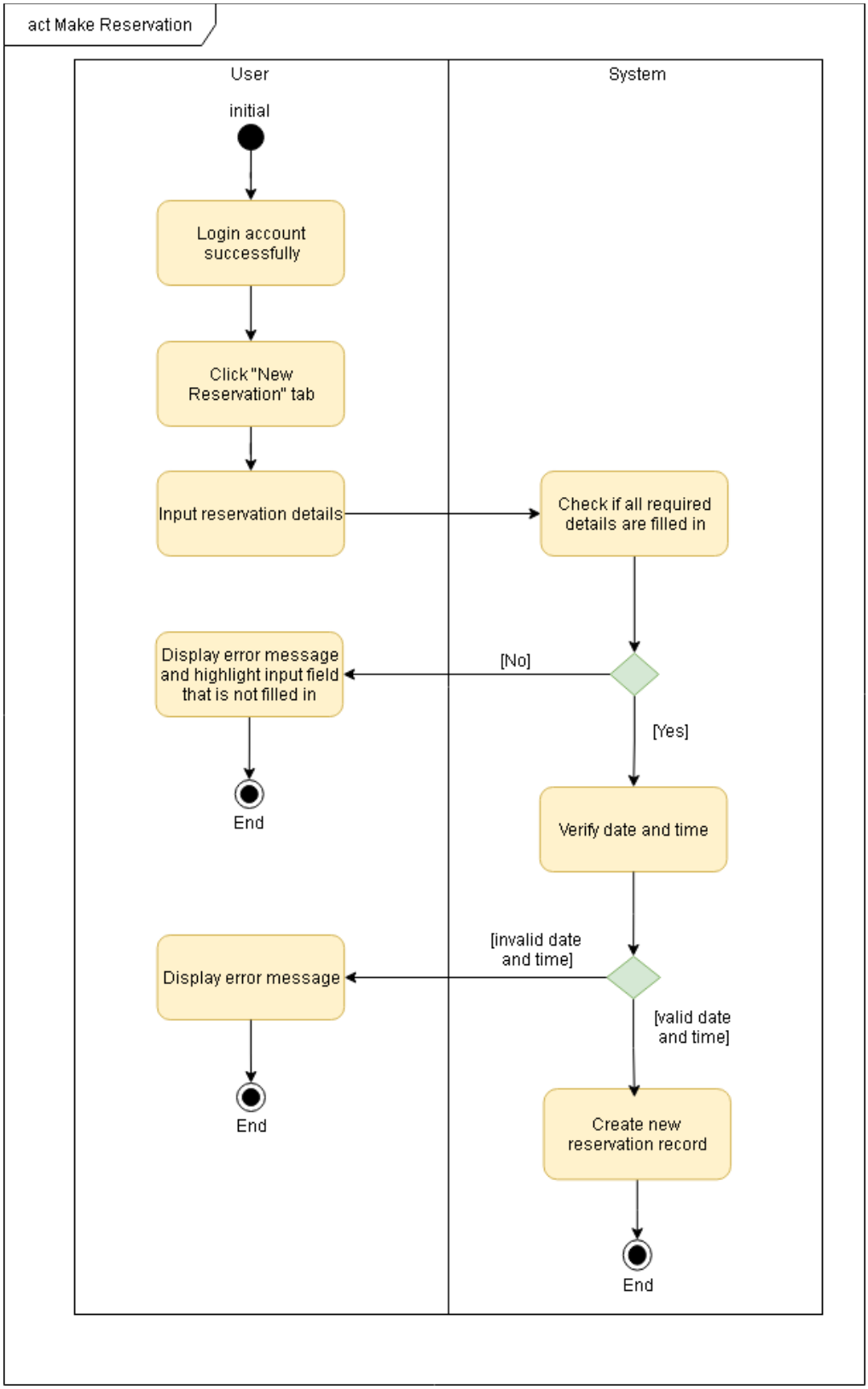



Figure 5-38: Activity Diagram - Make Reservation

#### 5.3.1.4 View Reservation

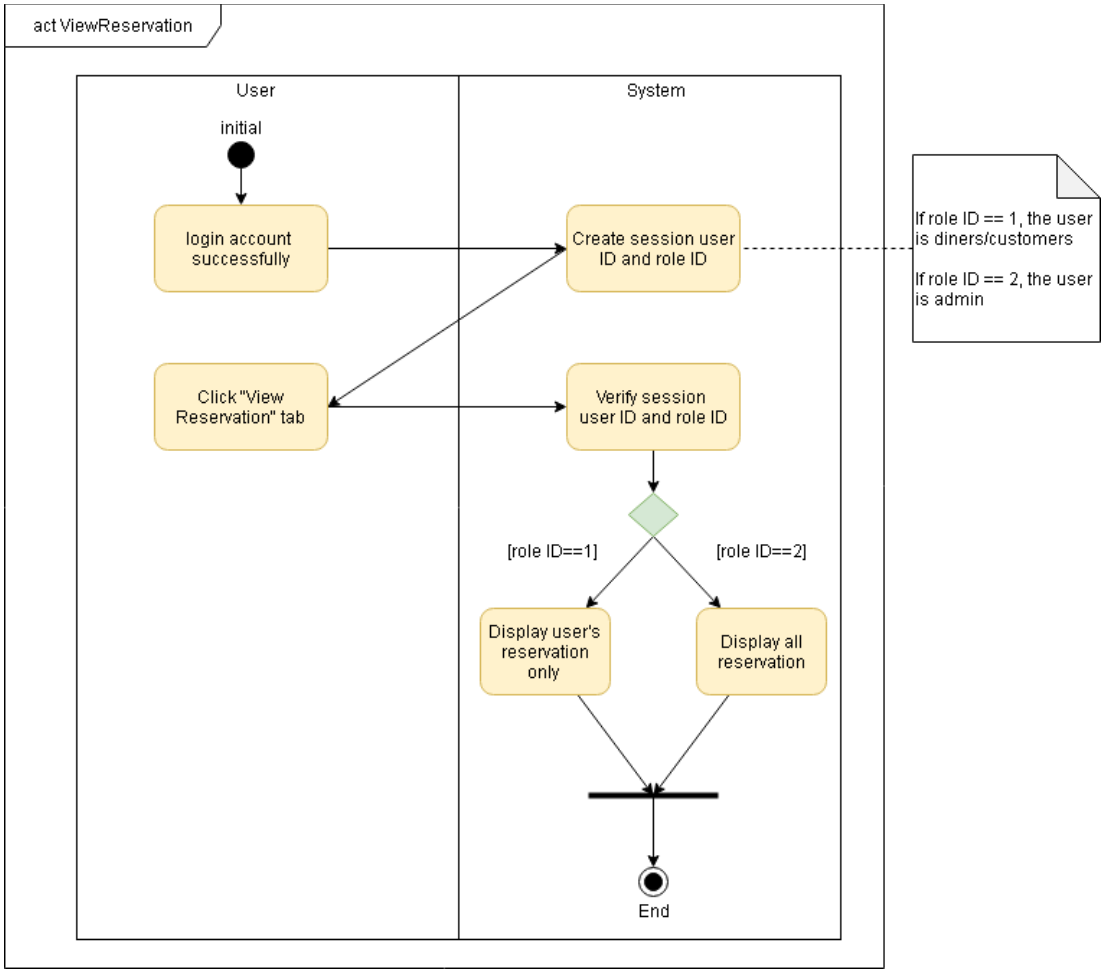



Figure 5-39: Activity Diagram - View Reservation

### 5.3.1.5 Cancel Reservation

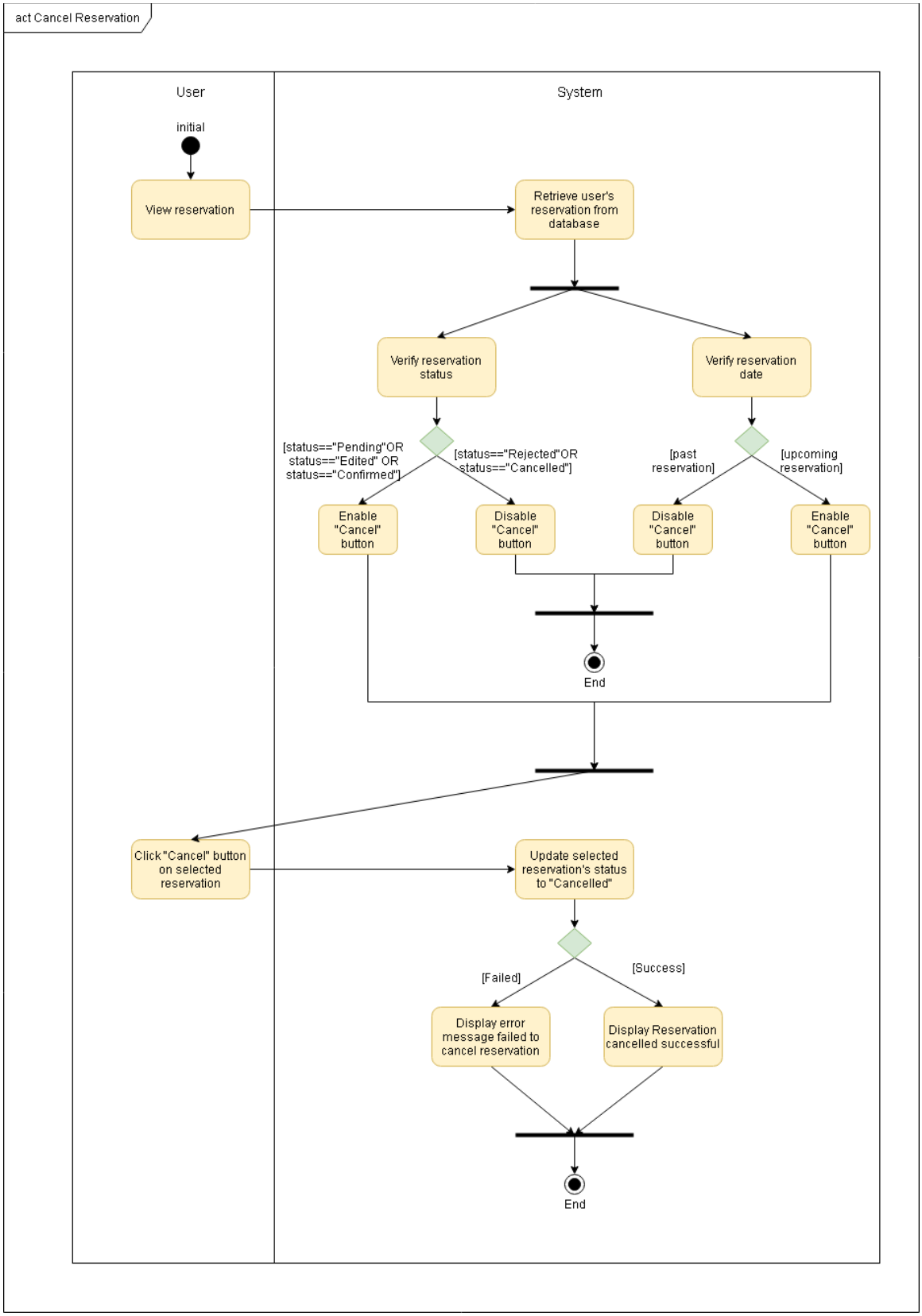



Figure 5-40: Activity Diagram - Cancel Reservation

### 5.3.1.6 Pre-Order Food

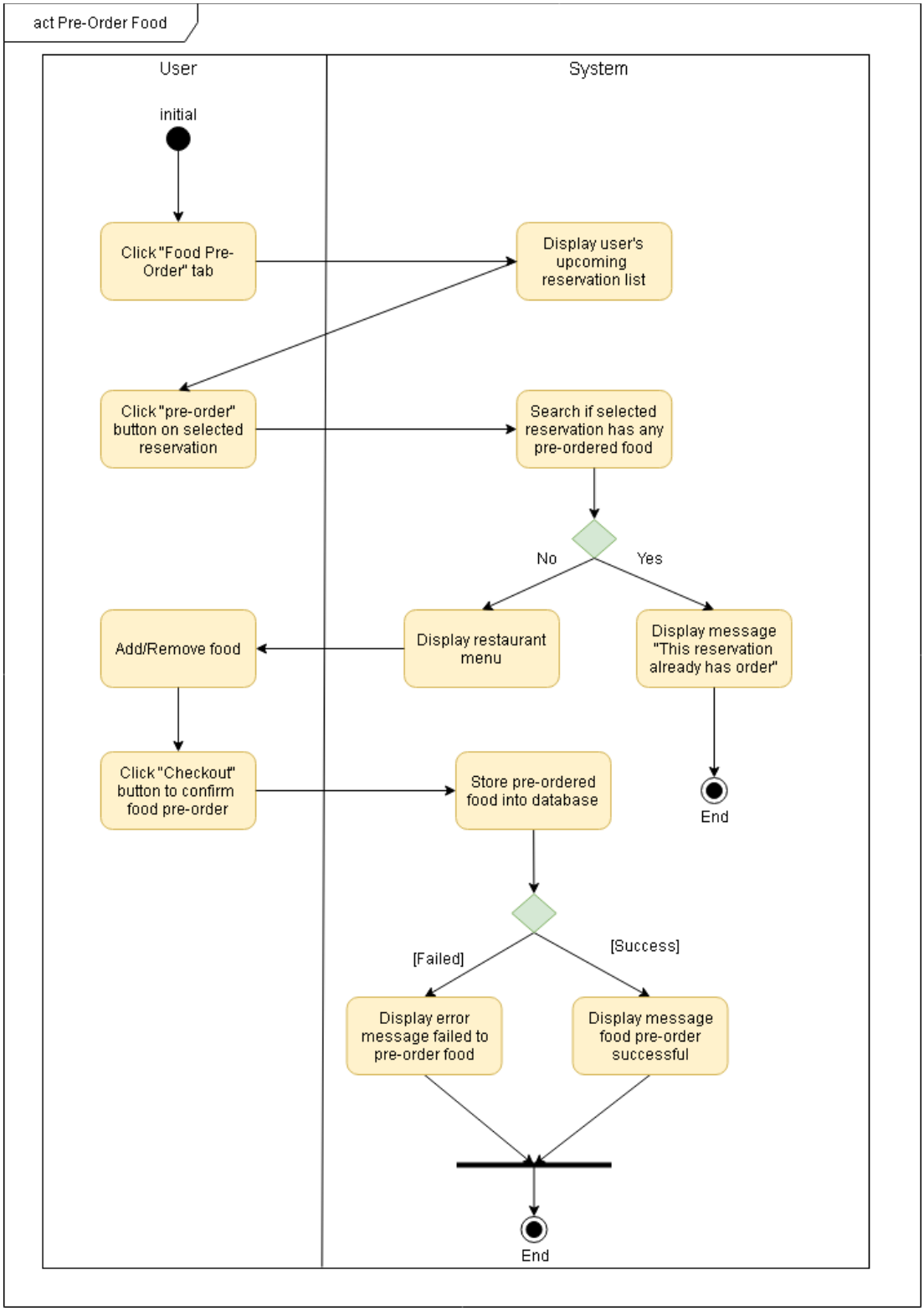



Figure 5-41: Activity Diagram - Pre-Order Food

### 5.3.1.7 View Pre-Order Food List

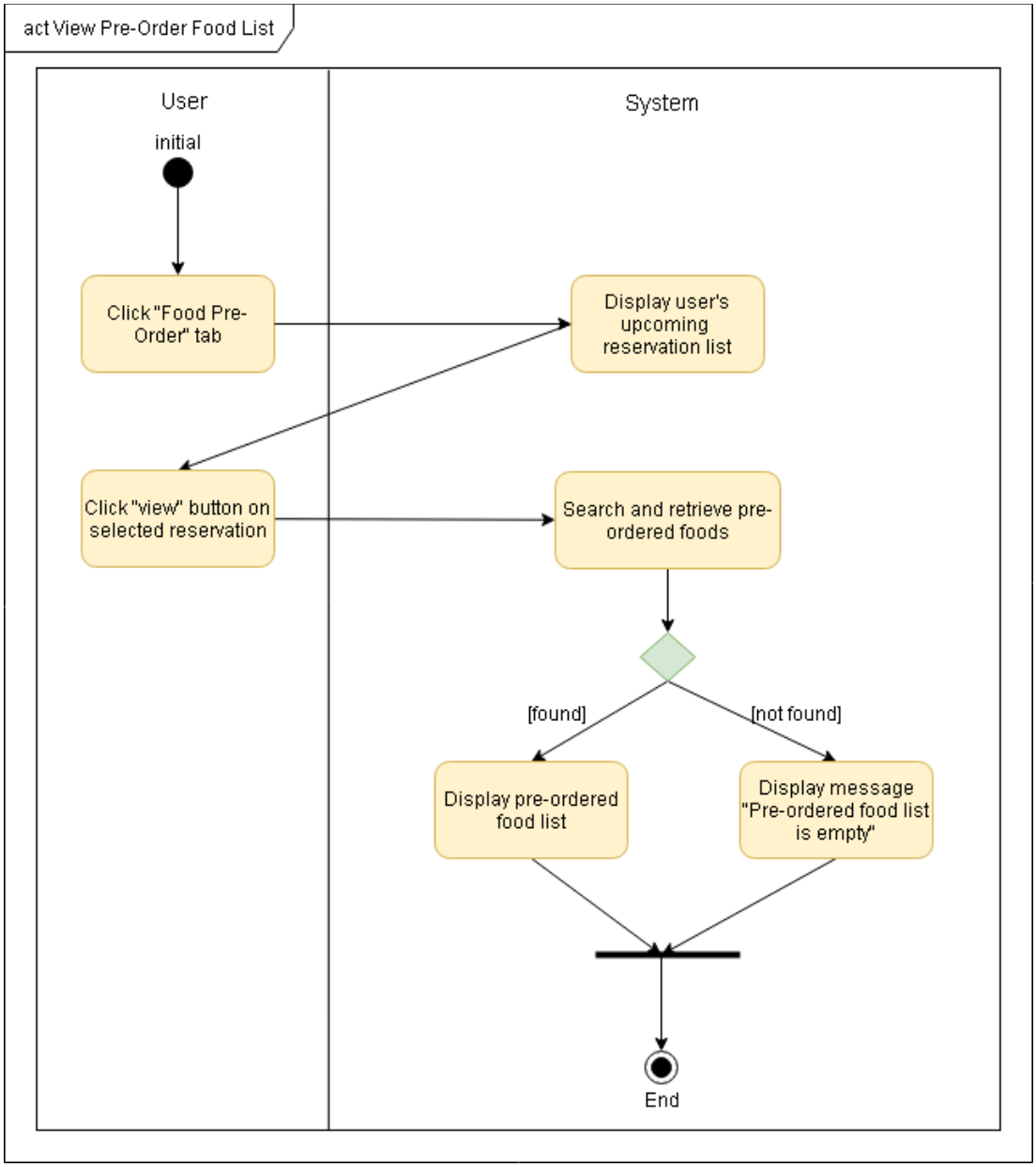



Figure 5-42: Activity Diagram - View Pre-Order Food List

### 5.3.1.8 Modify Pre-Order Food

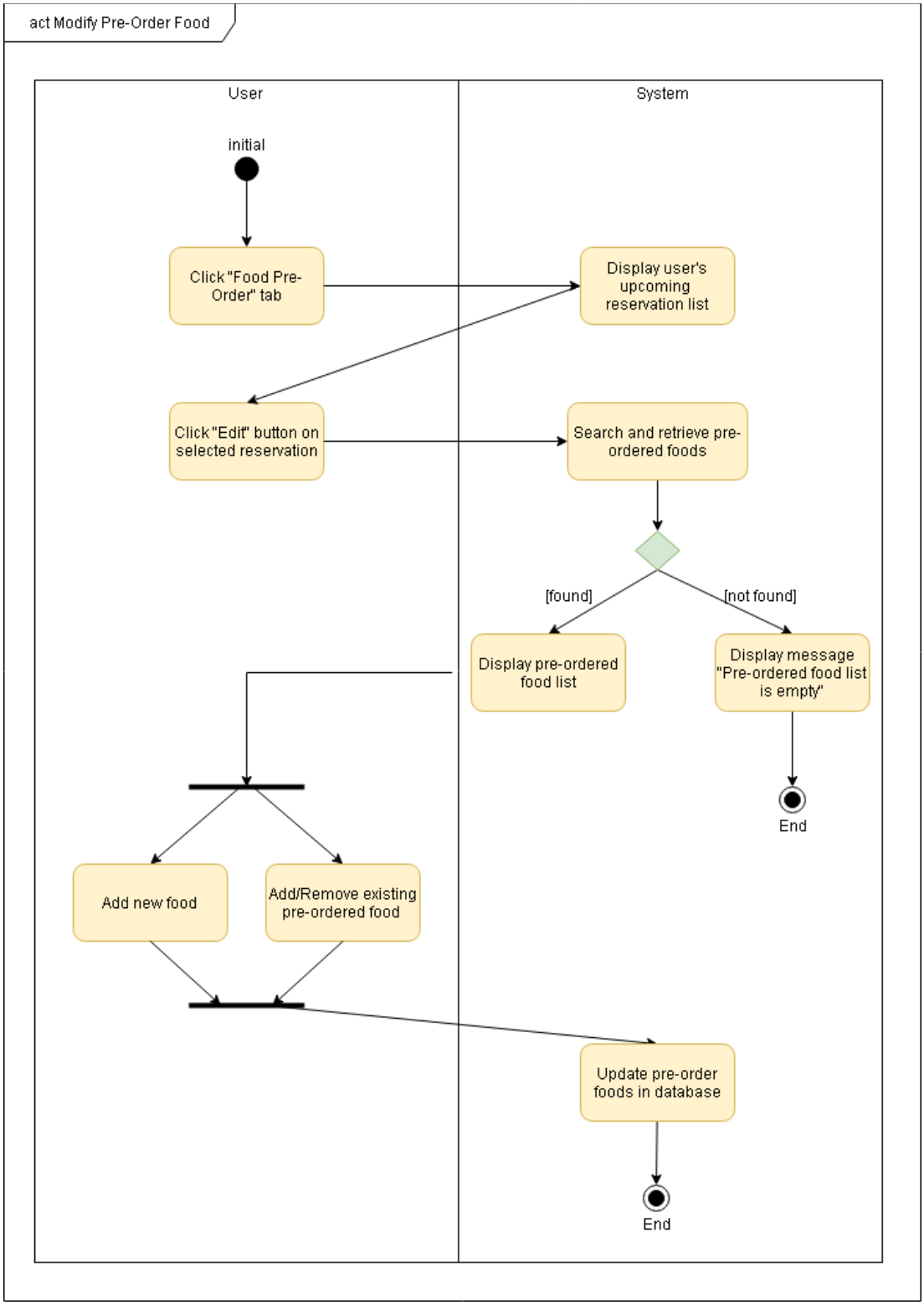



Figure 5-43: Activity Diagram - Modify Pre-Order Food

### 5.3.1.9 Edit Reservation

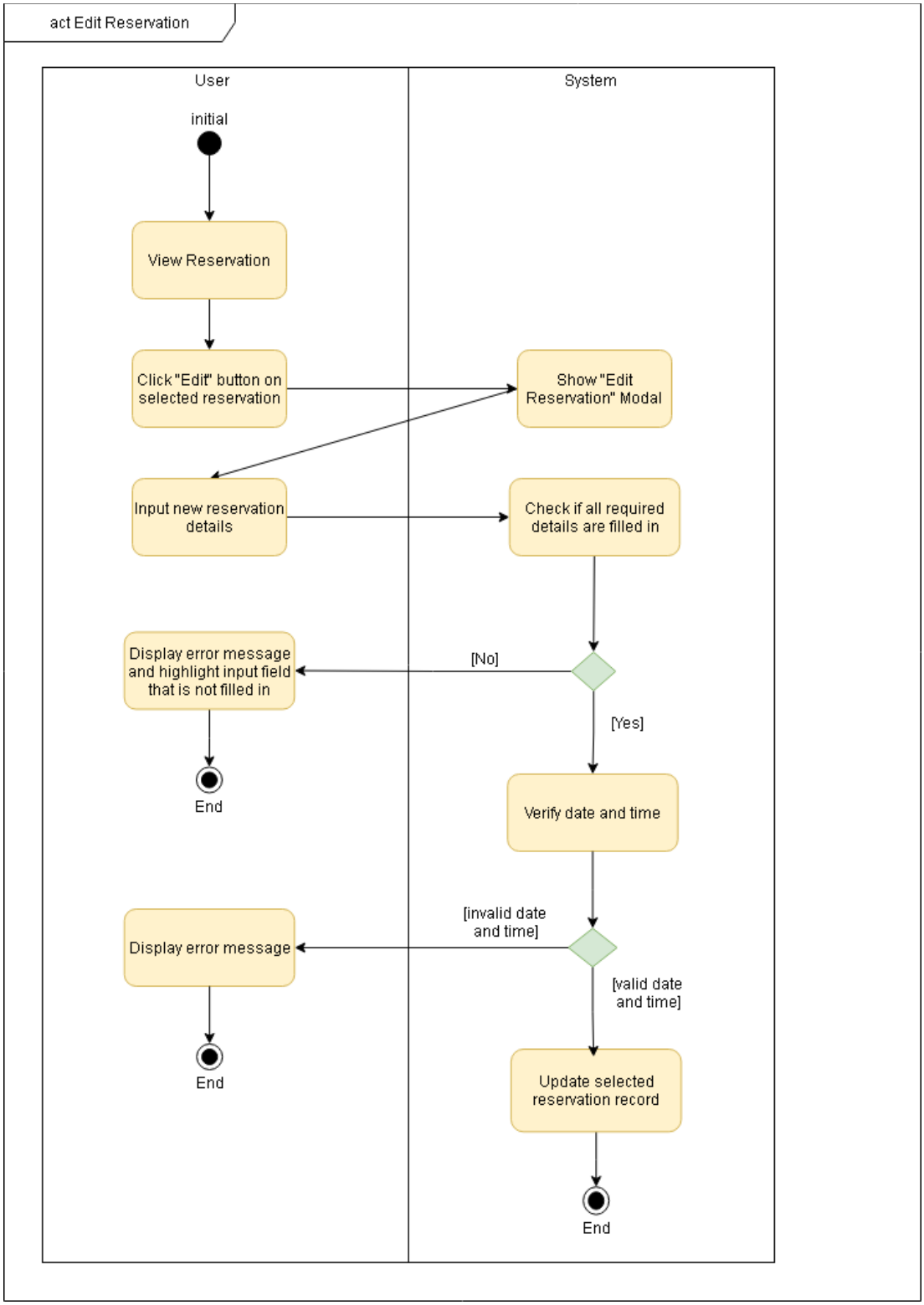



Figure 5-44: Activity Diagram - Edit Reservation

### 5.3.1.10 Create New Dish

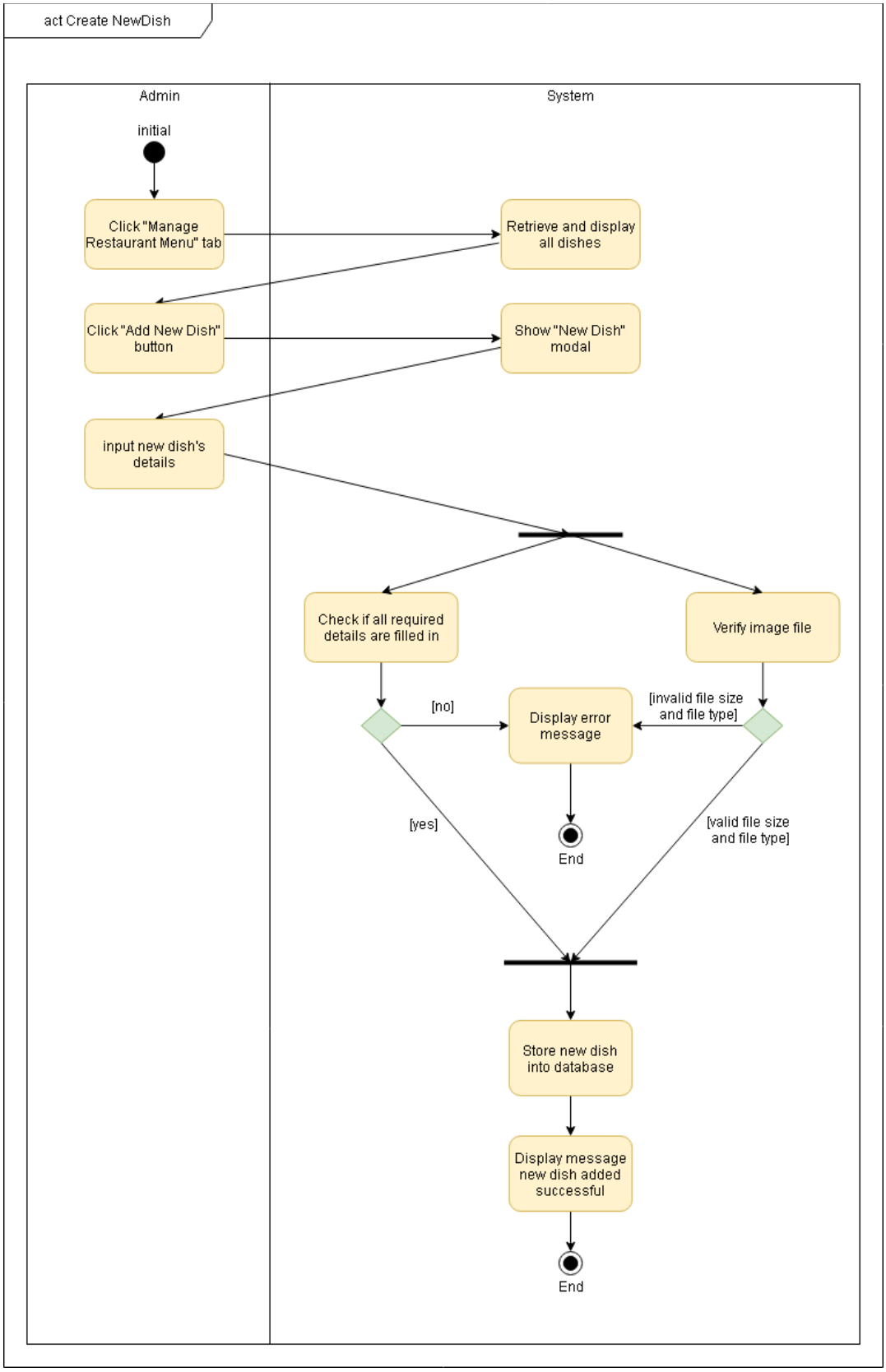



Figure 5-45: Activity Diagram - Create New Dish

### 5.3.1.11 Edit Dish

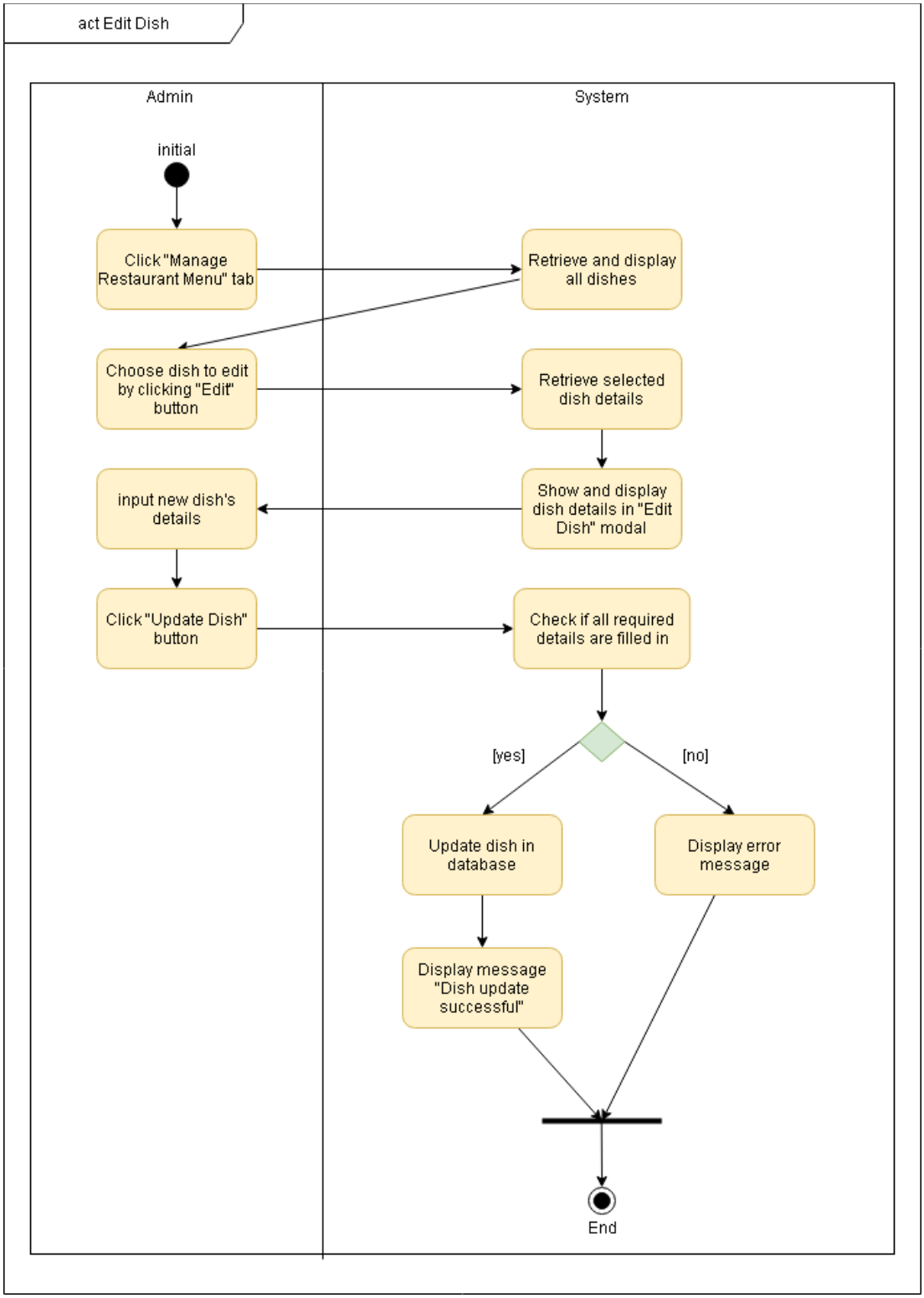



Figure 5-46: Activity Diagram - Edit Dish

### 5.3.1.12 Activate/Deactivate Dish

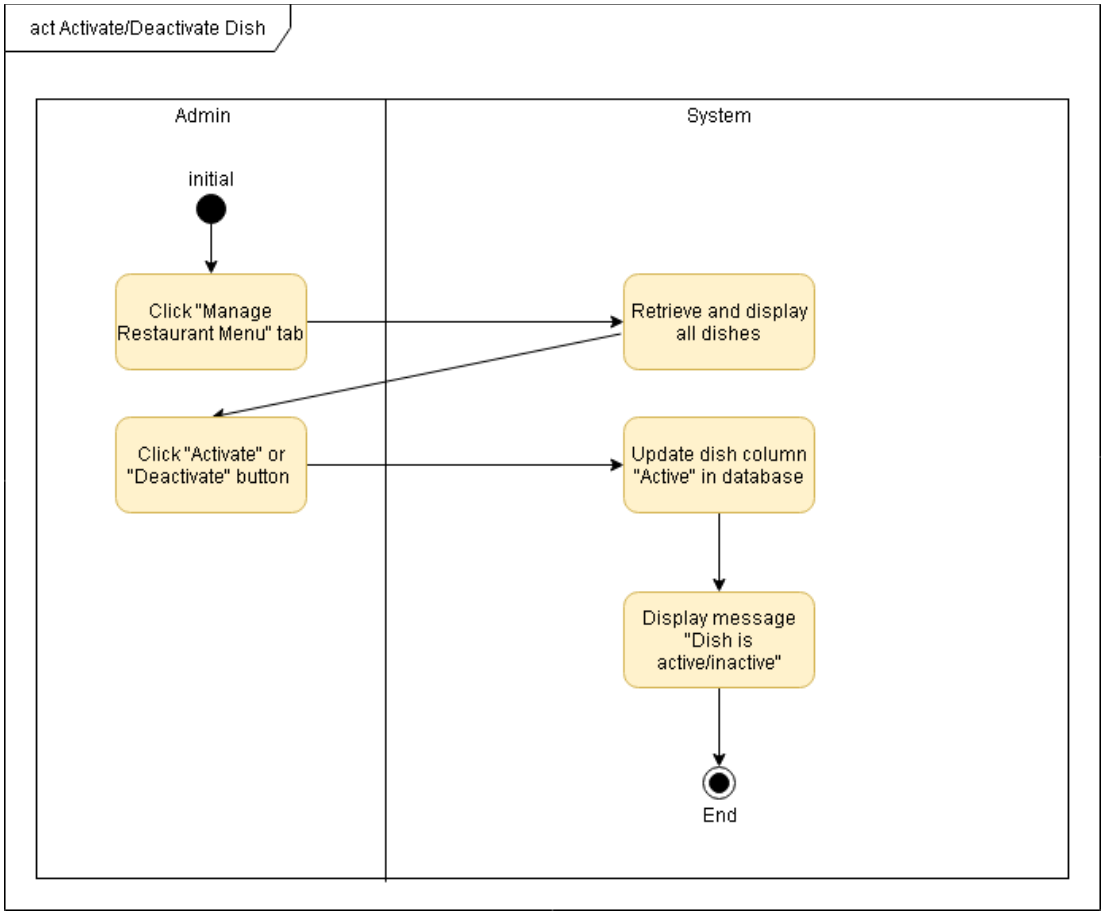



Figure 5-47: Activity Diagram - Activate/Deactivate Dish

### 5.3.1.13 Create Dish Category

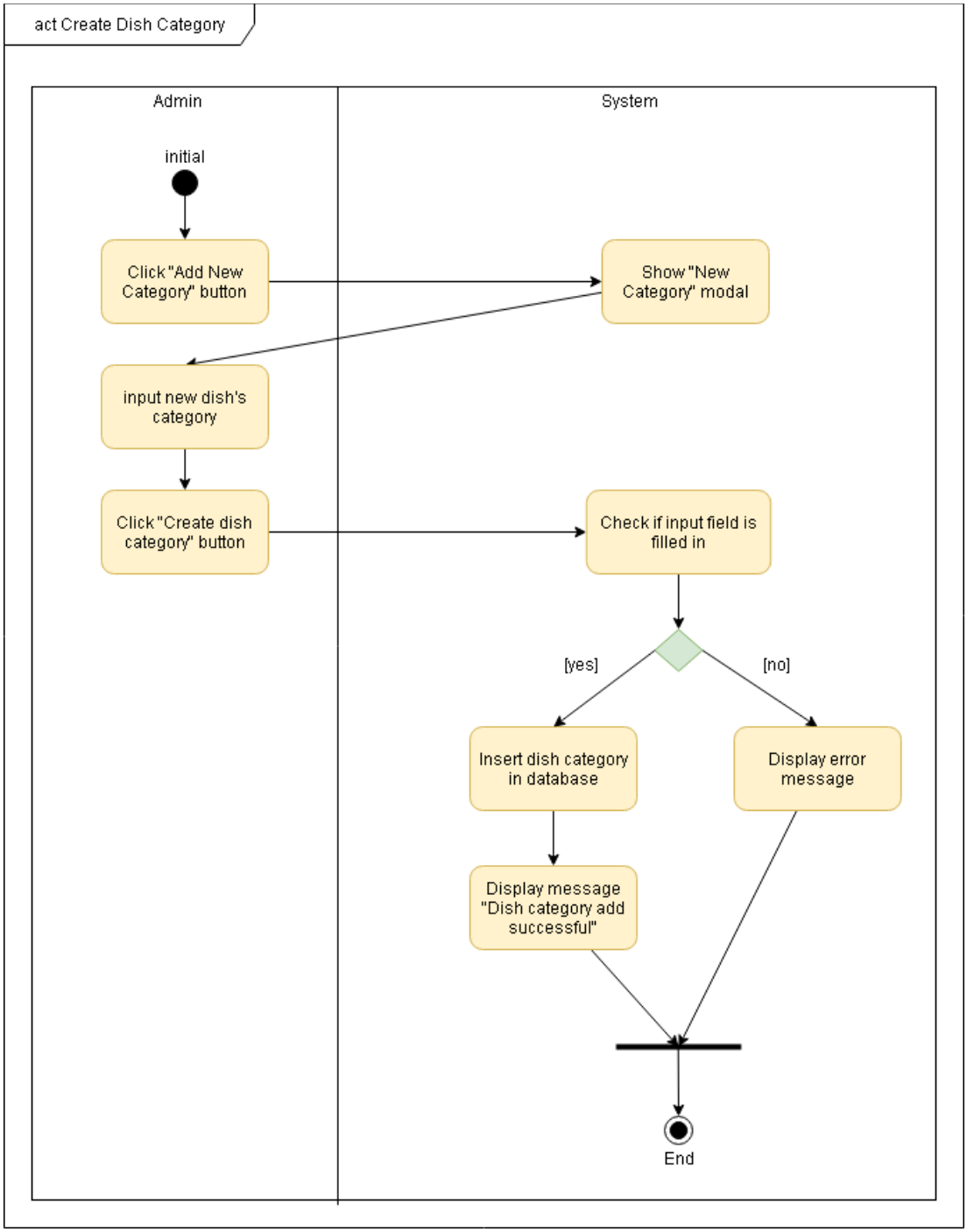



Figure 5-48: Activity Diagram - Create Dish Category

#### 5.3.1.14 Remove Dish Category

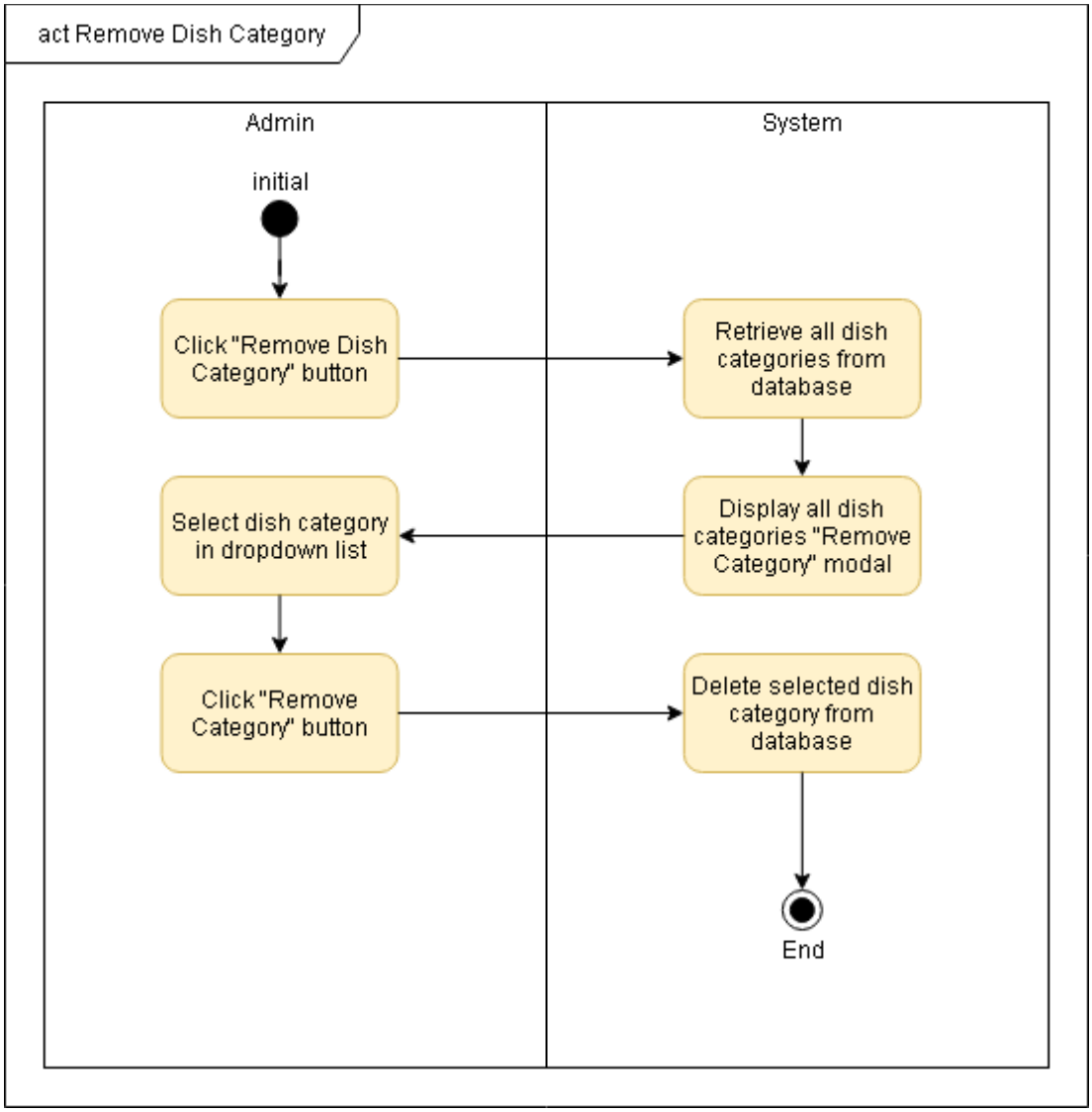



Figure 5-49: Activity Diagram - Remove Dish Category

### 5.3.1.15 Change Dish Photo

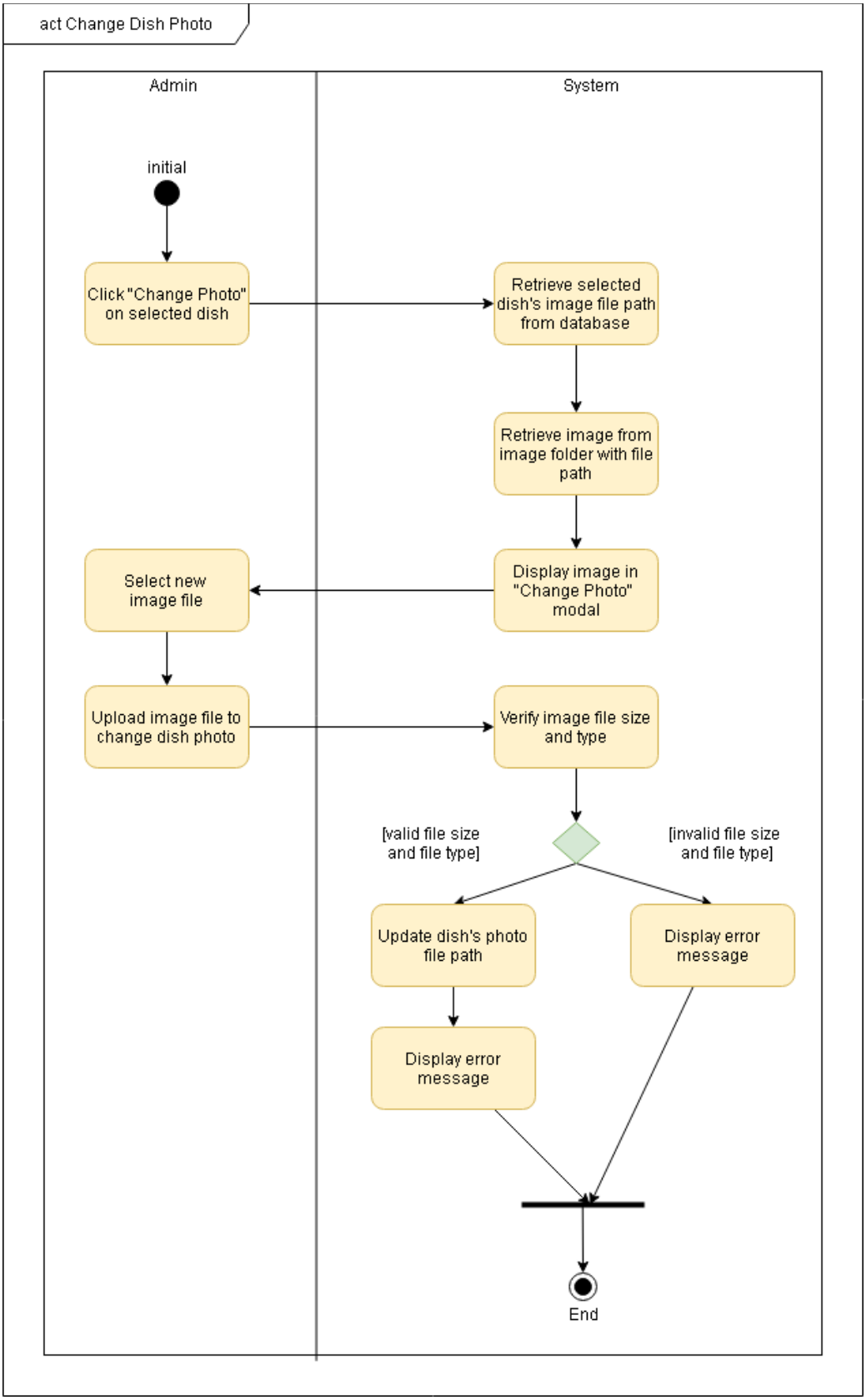



Figure 5-50: Activity Diagram - Change Dish Photo

### 5.3.1.16 View Reporting

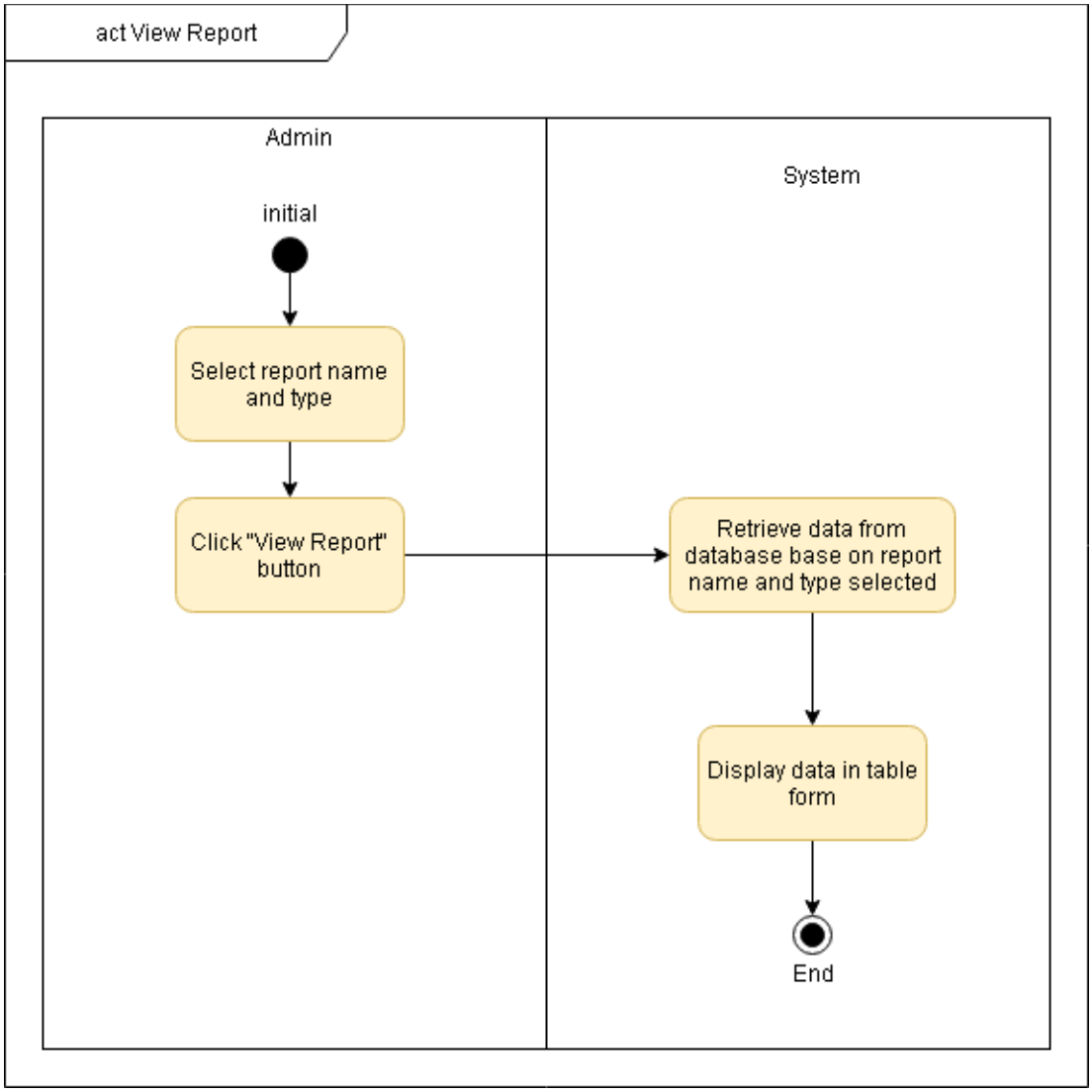



Figure 5-51: Activity Diagram - View Reporting

### 5.3.1.17 Export to Excel/PDF File

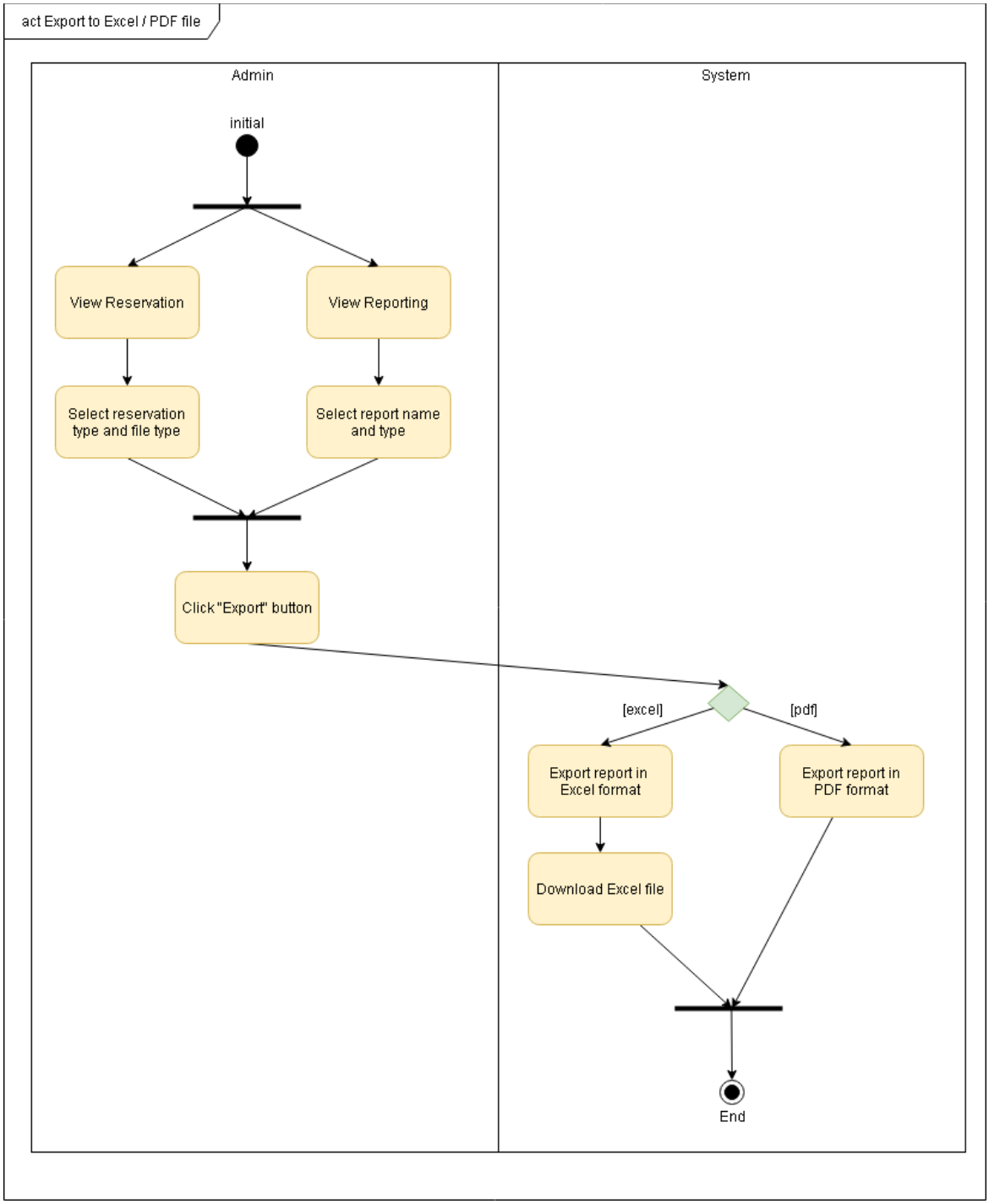



Figure 5-52: Activity Diagram - Export to Excel/PDF File

### 5.3.1.18 Confirm/Reject Reservation and Email Notification

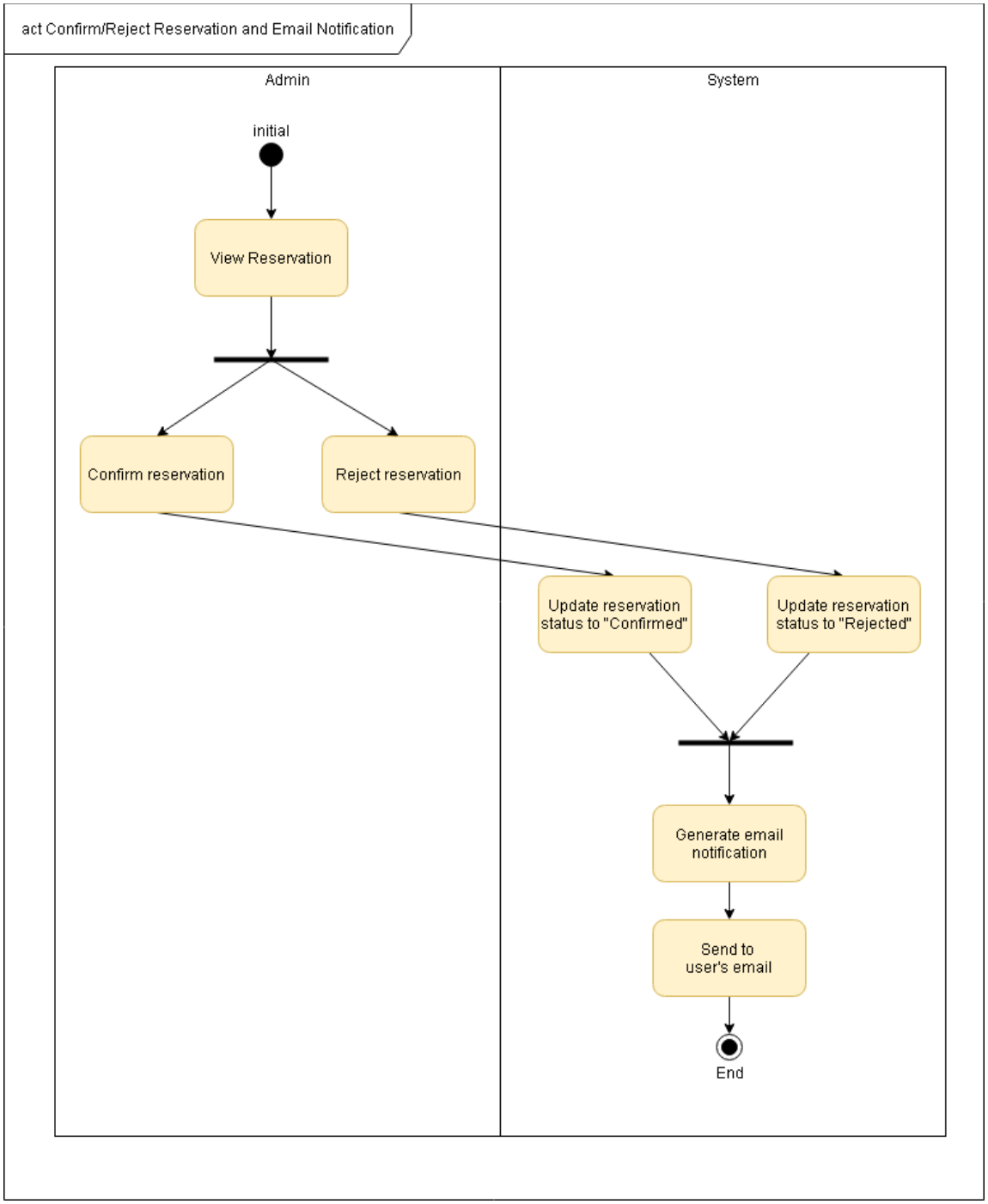



Figure 5-53: Activity Diagram - Confirm/Reject Reservation and Email Notification

## 5.4 System Architecture Design

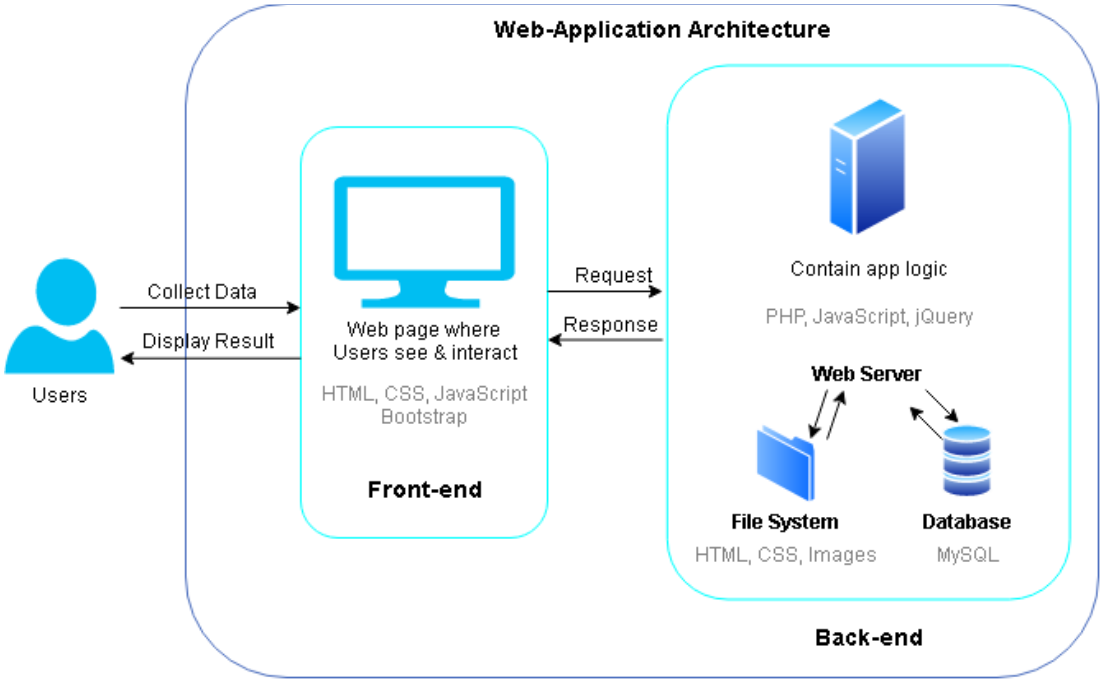



Figure 5-54: Web-based System Architecture

Figure 5-54 above shows the web-based system architecture implemented in this project. Restaurant reservation system consists of front-end, which is known as client-side, and back-end, also known as server-side of the system.

When users visit the web-based system with browsers, the users are able to see a web page, which is a front-end of the system and have interaction with the system. The web programming languages mostly used in designing front-end of the systems are HTML, CSS and Bootstrap framework. The front-end of the system aims to collect data input by users through the web page and send to back-end of the system, which is the web server.

The HTTP requests and data input from user's browser are analysed and processed in back-end of the system, which is the server-side. The server-side will return the data requested from users and front-end codes to display it on web browser. MySQL database connection, business and application logic are mostly written in PHP languages and others such as JavaScript and jQuery.

## 5.5 Entity Relational Diagram

### 5.5.1 Logical Entity Relational Diagram

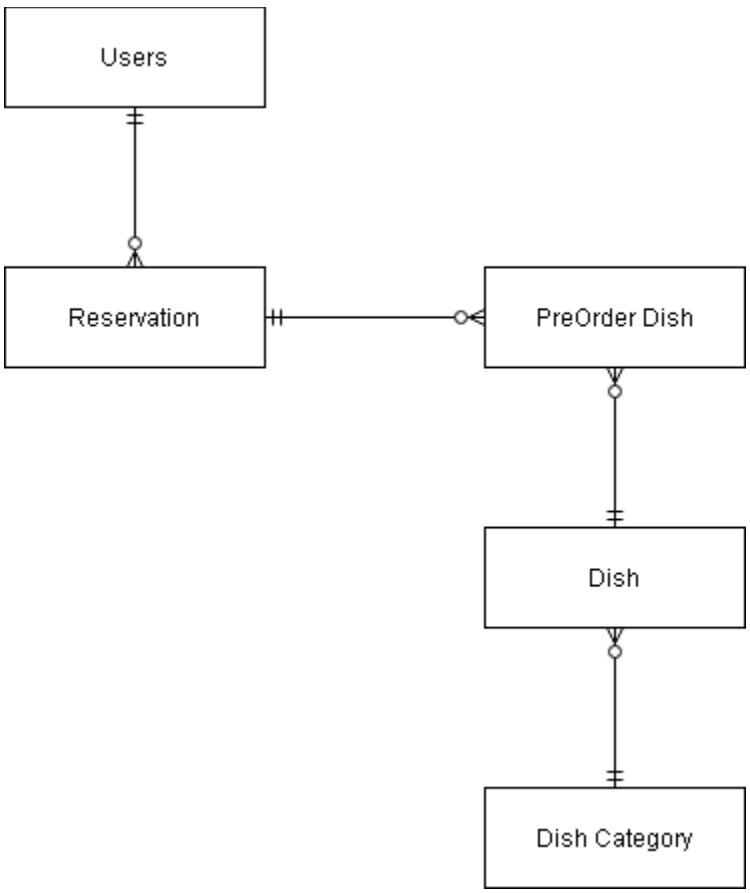



Figure 5-55: Logical Entity Relational Diagram

Table 5-1: Description of Logical Entity Relational Diagram

| **Table Name** | **Description** |
|---|---|
| Users | Include emails, username, role, date of registration of all users in the system (roles including admin and diner) |
| Reservation | Stores detailed information of all reservations |
| PreOrder Dish | Stores detailed information of all the pre-ordered dishes |
| Dish | Stores detailed information of all dishes |
| Dish Category | Stores information of all categories of dishes |

### 5.5.2 Physical Entity Relational Diagram

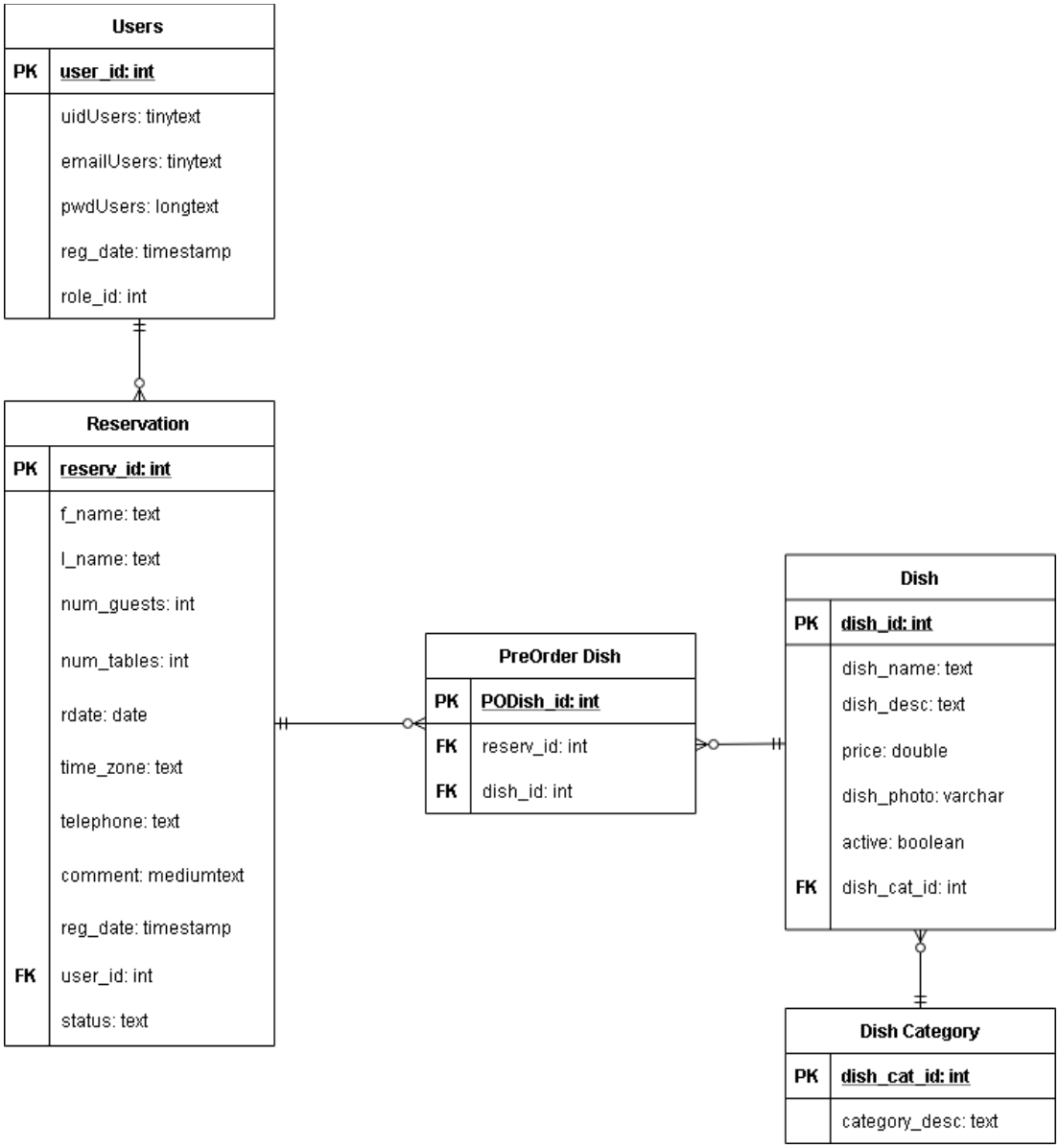



Figure 5-56: Physical Entity Relational Diagram

### 5.5.3 Data Dictionary

**Entity: User**

Table 5-2: Data Dictionary for User Entity

| Property | Entity Description | Data Type | PK or FK | Nulls |
|---|---|---|---|---|
| user_id | Unique identification for user | int | PK | No |
| uidUsers | User's username | tinytext | | No |
| emailUsers | User's email | tinytext | | No |
| pwdUsers | User's password | longtext | | No |
| reg_date | Date of user account registration | timestamp | | No |
| role_id | Unique identification for role assigned to user | int | FK | No |

**Entity: Reservation**

Table 5-3: Data Dictionary for Reservation Entity

| Property | Entity Description | Data Type | PK or FK | Nulls |
|---|---|---|---|---|
| reserv_id | Unique identification for reservation | int | PK | No |
| f_name | First name of user | text | | No |
| l_name | Last name of user | text | | No |
| num_guests | Number of guests | int | | No |
| num_tables | Number of tables | int | | No |
| rdate | Date of reservation | date | | No |
| time_zone | Time zone of reservation | text | | No |
| telephone | User's telephone number | text | | No |
| comment | Comment from user | mediumtext | | Yes |
| reg_date | Date of recording this data | timestamp | | No |
| user_id | Unique identification for user | int | FK | No |
| status | Status of reservation | text | | No |

**Entity: PreOrder Dish**

Table 5-4: Data Dictionary for PreOrder Dish Entity

| Property | Entity Description | Data Type | PK or FK | Nulls |
|---|---|---|---|---|
| PODish_id | Unique identification for pre-ordered dish | int | PK | No |
| reserve_id | Unique identification for reservation | int | FK | No |
| dish_id | Unique identification for dish | int | FK | No |

**Entity: Dish**

Table 5-5: Data Dictionary for Dish Entity

| Property | Entity Description | Data Type | PK or FK | Nulls |
|---|---|---|---|---|
| dish_id | Unique identification for dish | int | PK | No |
| dish_name | Name of dish | text | | No |
| dish_desc | Description of dish | text | | No |
| price | Price of dish | double | | No |
| dish_photo | Photo of dish | varchar | | No |
| active | Dish can be visible to diners when dish is activated, vice versa | boolean | | No |
| dish_cat_id | Unique identification for dish's category | int | FK | No |

**Entity: Dish Category**

Table 5-6: Data Dictionary for Dish Category Entity

| Property | Entity Description | Data Type | PK or FK | Nulls |
|---|---|---|---|---|
| dish_cat_id | Unique identification for dish's category | int | PK | No |
| category_desc | Description of category | text | | No |

# CHAPTER 6

# SYSTEM IMPLEMENTATION

## 6.1 Introduction

In this project, there are two main users in restaurant reservation system which are diners and admin. Each different user has different privileges and authorization to access some respective features and web page.

## 6.2 Diner Module

### 6.2.1 Diner Login Verification

Login verification is developed to authenticate and authorize diners to access the system. Diner and admin are using the same login modal as shown in figure 6-1 to login the account. The user credentials for login the account are the combination of username and password, or email and password. After the diners provide user credential at login modal, the system will verify user credential with the one stored in MySQL database. The diner who attempts to login is granted access to restaurant reservation system if the user credential provided is correct. On the other hand, if an incorrect user credential is provided, an error message will be prompted as shown in figure 6-2.

The diners click the login button on the right top corner of the main page to display the login modal. At login modal, all the input fields are required to fill in by diners, otherwise the input field which is left blank will be highlighted and diners will be notified to fill in the blank input field. Diners are able to enter username or email to login the account. If the username or email provided does not exist in database, the error message is prompted to notify diners the username or email provided does not exist. If password provided is incorrect, the error message is prompted as well to state the username or password is incorrect. After the diners is login to the system successfully, the system will create a session to store the user ID and role ID. Role ID is used to identify the user role.

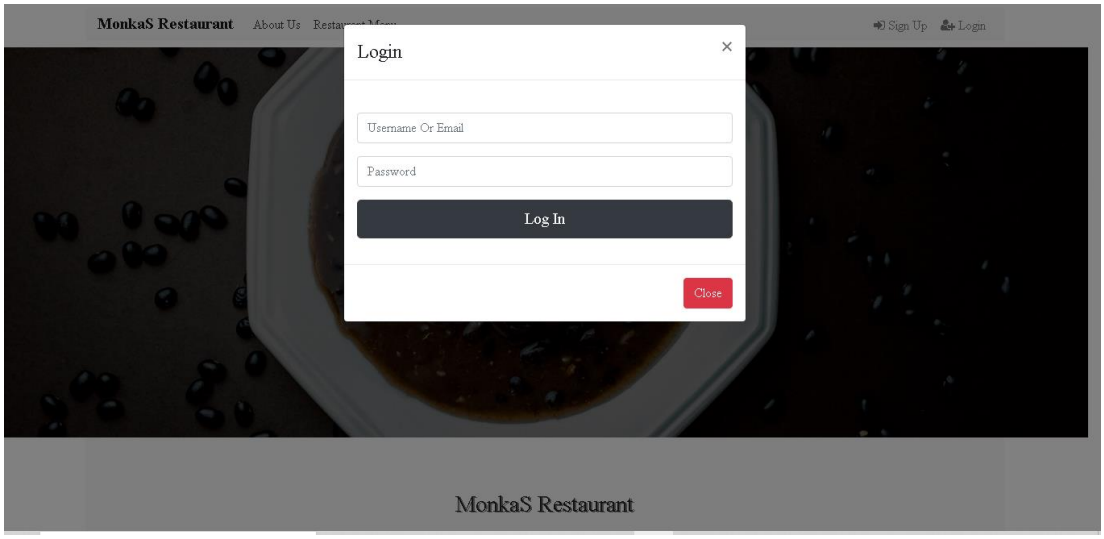



Figure 6-1: Login Modal

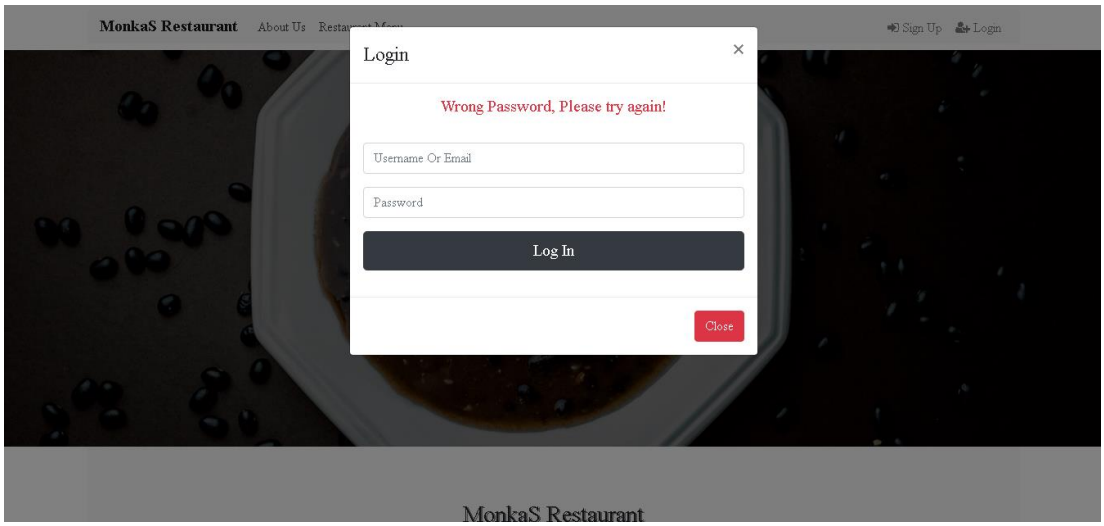



Figure 6-2: Login Modal - Failed to Login

### 6.2.2 Diner Account Sign-Up

Account sign-up feature is to allow diners to create an account to access and use the features of the restaurant reservation system. The account registration modal will be shown as shown in figure 6-3 after the diners click the "Sign Up" button on the top right corner of the main page. All the input fields are required to be filled in, as well as the confirm password must be same as the password, otherwise the error message will be prompted. The system will verify the information provided with database if the username or email has already taken. An error message will be displayed if username or email has already taken or used to register an account. The wrongly formatted email will also trigger the error message to be prompted by system.

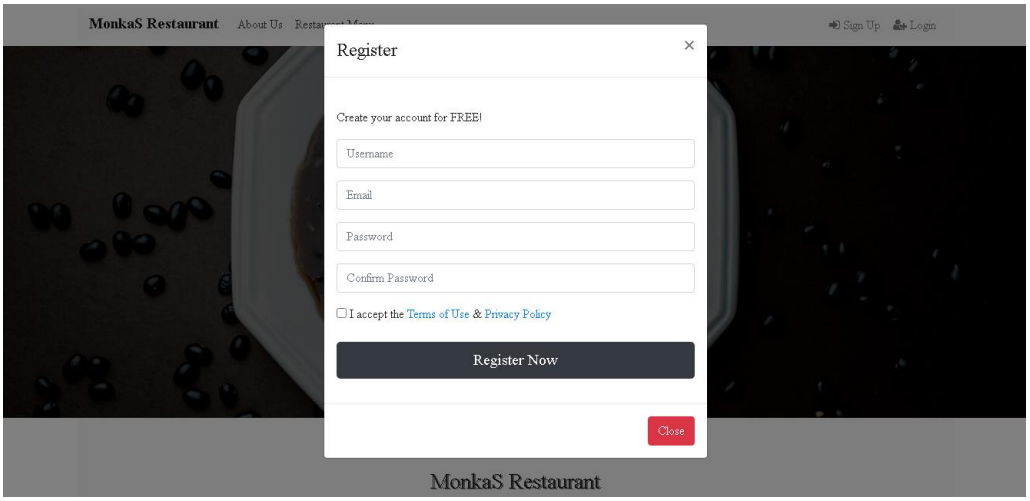



Figure 6-3: Account Sign-Up Modal

### 6.2.3 Make Reservation

Once the diner login to the system successfully, the system will redirect diner to a web page where diners are able to make a new reservation. All the information is required to fill in, except for reservation's remarks, which is optional to fill in. Only alphabetic characters are allowed for first name and last name, otherwise the error message, stating invalid name is prompted. The number of persons for a reservation must at least 2 persons.

The reservation date and time selected by diner will be verified whether it is valid date and time. For examples of invalid date and time, current date and time is 2:00 p.m., 6 August 2021 but the reservation date and time selected by diner is 1:00 p.m., 6 August 2021 or even earlier. Furthermore, diner is still able to make a reservation at least 2 hours in advance of the selected reservation date and time. For example, at 3.59 p.m., diner can still make reservation for 6:00 p.m. but reservation cannot be made at 4.00 p.m.

After filling in the reservation information, diners can click "Submit Reservation" to complete table booking.

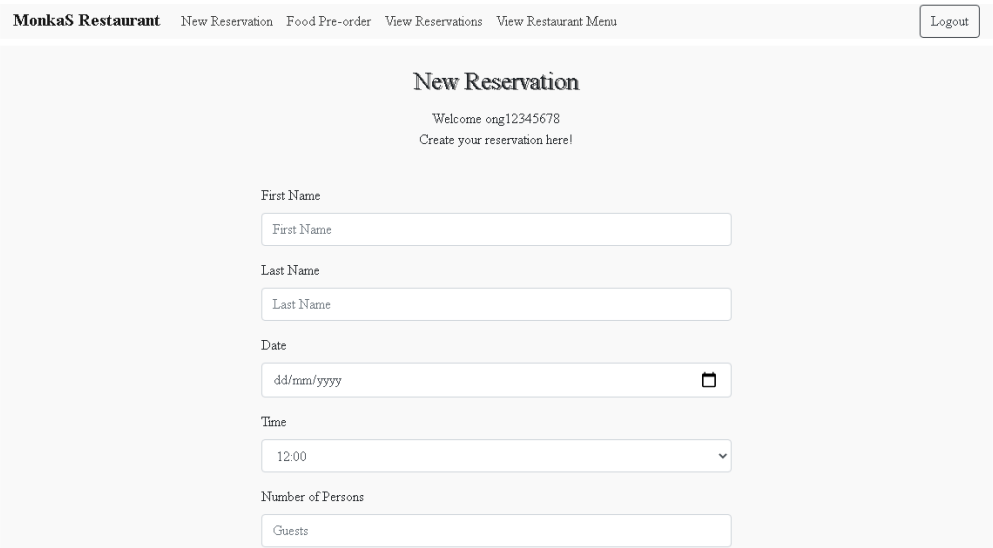



Figure 6-4: Make New Reservation

### 6.2.4 Food Pre-Order

Diners are able to pre-order food for their reservation. After diner completes table booking, the system will prompt a message to ask diner if they want to pre-order food for their reservation as shown in figure 6-5.

Another way to pre-order food is to navigate to food pre-order web page. A list of upcoming reservation will be displayed as shown in figure 6-6 for diners to pre-order food for the selected reservation. If the selected reservation already has at least one pre-ordered food, the system will display a message as shown in figure 6-7 to notify the diners and "View Order" and "Edit Order" buttons for diners to view or edit the pre-ordered food.

Furthermore, diners are only allowed to pre-order food and edit pre-ordered food list at least 2 hours in advanced of the reservation date and time. For example, at the same day, if the reservation's date and time is 6:00 p.m. and the current time is 4.00 p.m. or later, the "Edit" and "Pre-Order" buttons will be disabled.

After clicking "Pre-Order" button as shown in figure 6-6, restaurant menu is displayed as shown in figure 6-8 for diners to add or remove the food. All selected foods will be shown in order summary, and the grand total price will be calculated as shown in figure 6-9, so that diners are able to decide whether to add or remove more food before confirming the food pre-order by clicking the "Checkout" button.

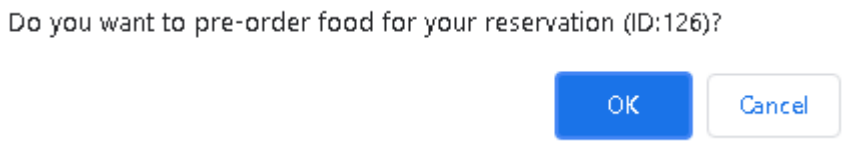



Figure 6-5: Food Pre-Order Message Prompted by System After Table Booking

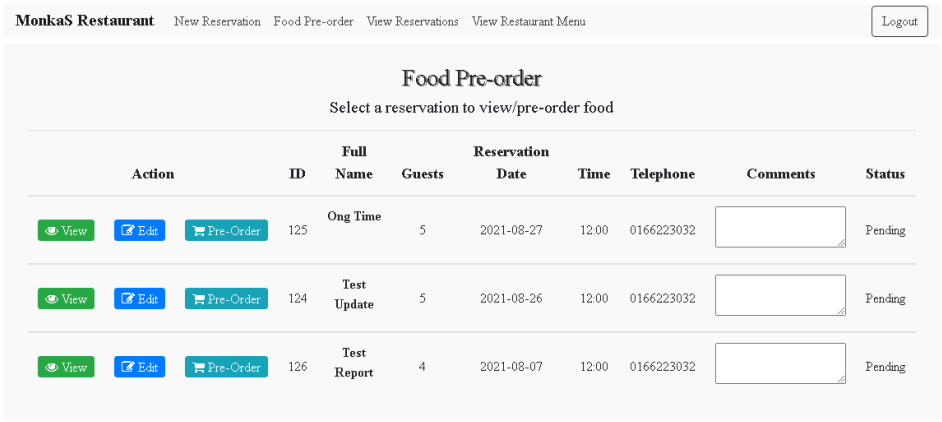



Figure 6-6: Reservation List for Food Pre-Order

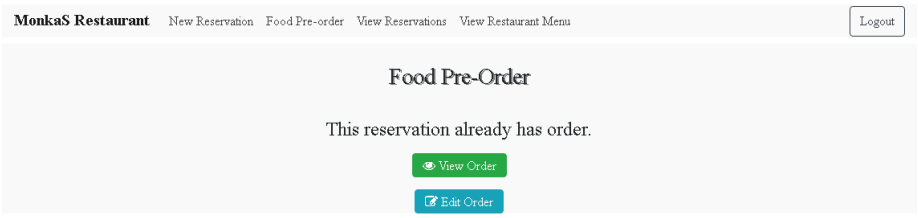



Figure 6-7: A Web Page Stating Reservation Already Have Pre-Ordered Food

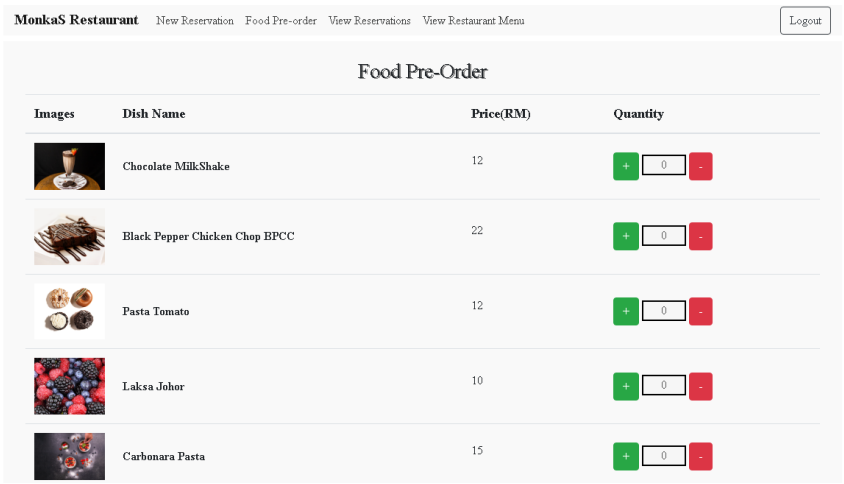



Figure 6-8: Restaurant Menu for Food Pre-Order

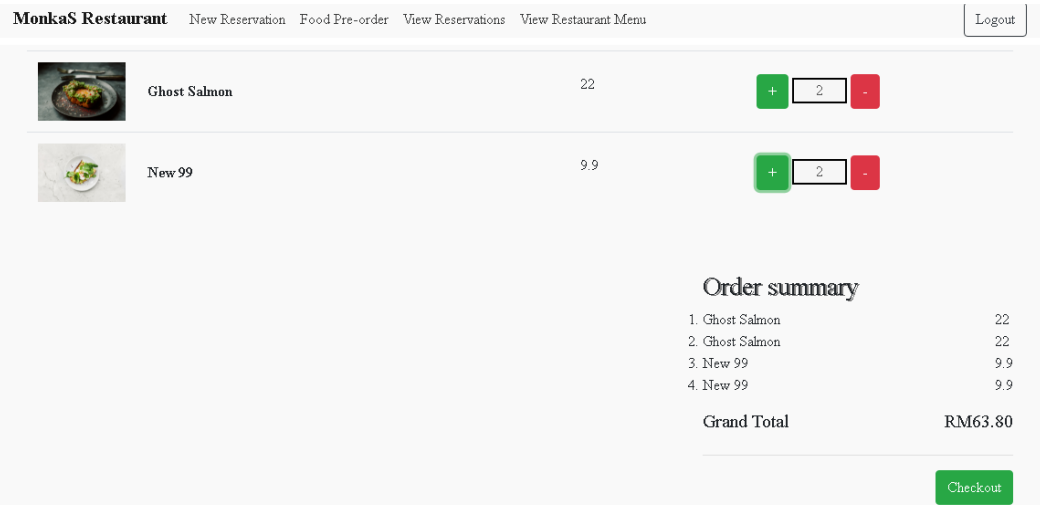



Figure 6-9: Food Pre-Order Summary and Checkout Button

### 6.2.5 View/Edit/Cancel Reservation

Diners are able to view and edit their reservations in this system. Their reservations will be grouped into two different group which are upcoming reservation and past reservation as shown in figure 6-10 and figure 6-11 respectively.

Diners cannot perform any actions other than viewing on the past reservation. For upcoming reservation, the reservation can only be edited or cancelled at least 2 hours in advanced of reservation date and time. Moreover, diners can only edit or cancel the reservation with the status “Pending”, “Edited”, or “Confirmed”. After diners click the “Edit” button, “Edit Reservation” Modal is displayed as shown in figure 6-11 for diners to edit the reservation. All the edited information will be also verified by system before update the information in database, same as verification process in section 6.2.3 before the new reservation information is stored into database. After reservation is updated successfully, the status of reservation is changed to “Edited” and required admin to confirm the reservation once again.

The cancellation of upcoming reservation can be performed by diners if the status reservation is “Pending”, “Edited”, or even “Confirmed” by admin. After the status of reservation is updated to “Cancelled”, diners cannot perform any actions on the cancelled reservation. If the reservation is rejected by admin, diners are able to modify the rejected reservation so that diners do not need to make a new reservation again, and then re-confirmed by admin again.

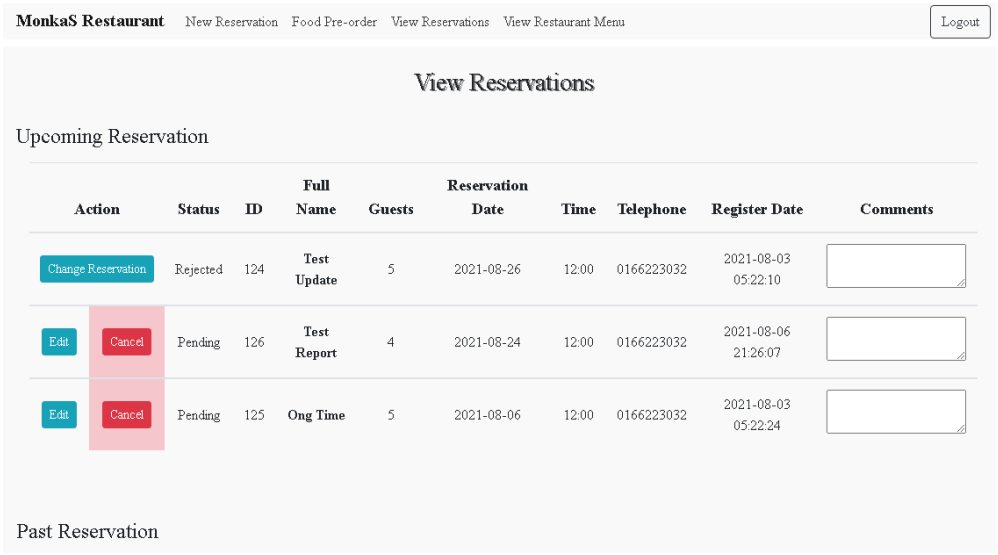



Figure 6-10: Upcoming Reservation List

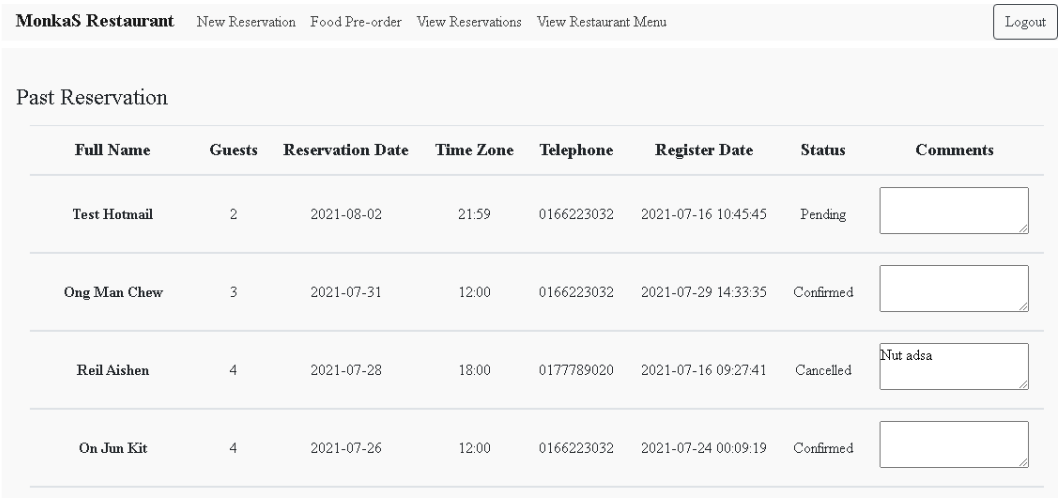



Figure 6-11: Past Reservation List

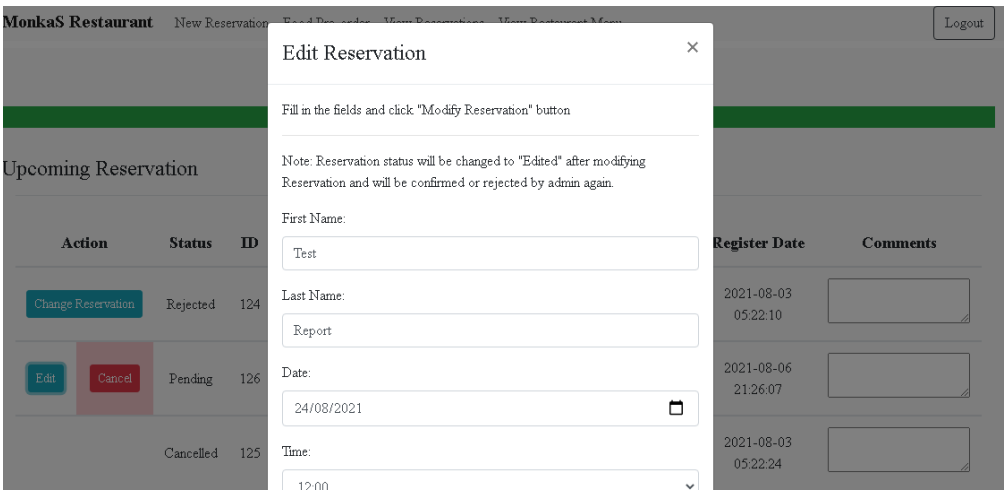



Figure 6-12: Edit Reservation Modal

### 6.2.6 View Restaurant Menu

Diners are able to view restaurant menu with or without login the account. Without login the account, restaurant menu can be viewed by clicking the "Restaurant Menu" navigation tab on the header of main page of the restaurant reservation system. Other than that, after login an account, dinners are also able view the restaurant menu by clicking the "View Restaurant Menu" navigation tab on the header of the web page.

The restaurant menu displays all the "Active" dishes, with their detailed information such as price and dish's description as shown in figure 6-13. The dishes can be activated or deactivated by admin instead of completely removing the dish from database. When the mouse pointer is hovered on the dish's image, the dish's name, price, description will be displayed as shown in figure 6-13. Besides that, diners are able to view the dishes based on the dish's category selected.

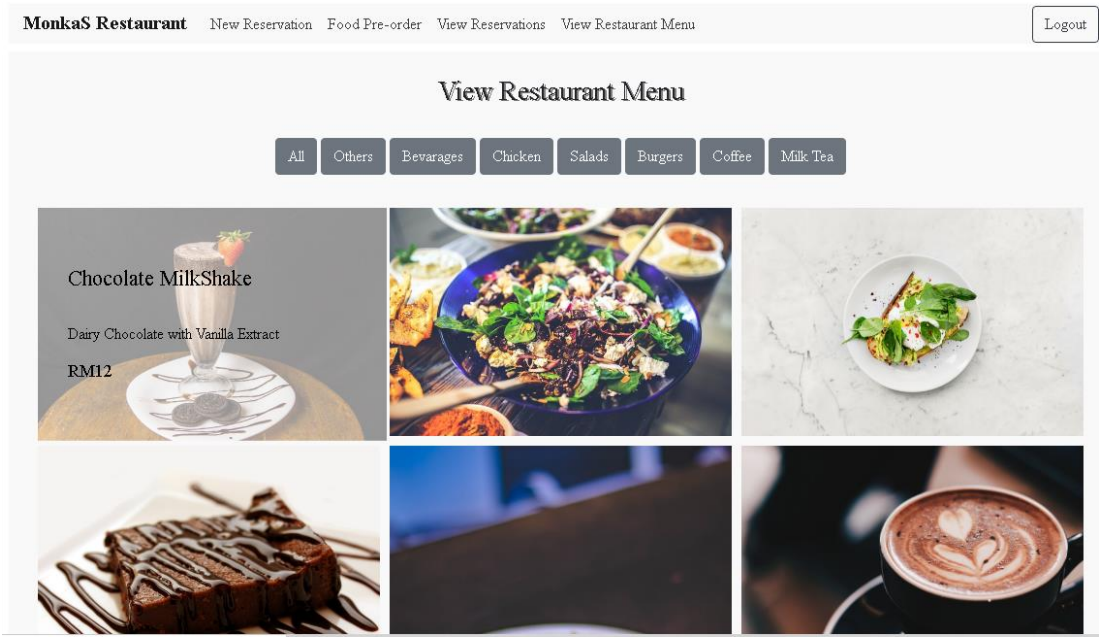



Figure 6-13: View Restaurant Menu

## 6.3 Admin Module

### 6.3.1 Admin Login Verification

The login method is the same as how diner login to the system. When user login to the system with admin account, the system will verify whether the user credential matches the one stored in database. If the user credential does exist in database and the role ID of the user is "2", which is an admin role, then the system will grant admin access to the user to have an authorization to access all the authorized web pages and features. The user with admin role will be redirected to "View Reservation" web page as shown in figure 6-14 after login as admin role successfully.

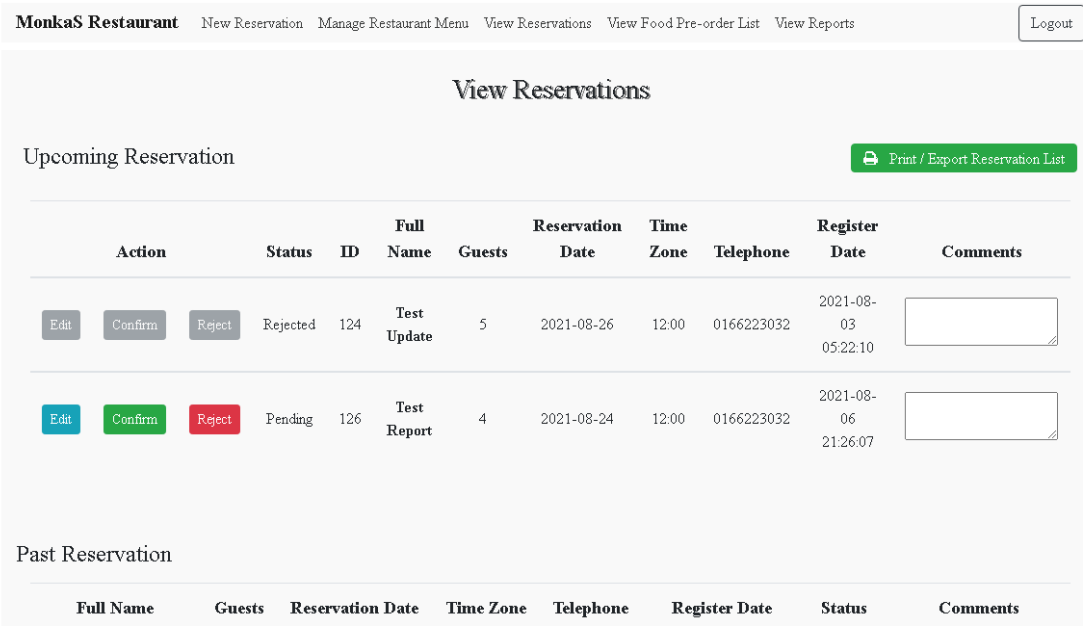



Figure 6-14: After Admin Login Successfully

### 6.3.2 Admin View/Edit Reservation

After admin login to the system successfully, the system will redirect admin to "View Reservation" page. The difference between admin role and diner role in viewing reservations is that, admin is able to view all the diner's reservation while diner is only allowed to view their own reservation. Furthermore, the admin is able to edit, confirm, and reject upcoming reservation.

The editing reservation process is same as diner role. The difference is that, admin is able to edit reservation any time before the reservation date and time, while diner is restricted to edit reservation at least 2 hours in advanced of reservation date.

### 6.3.3 Confirm/Reject Reservation and Email Notification

Admin has the authorization to confirm or reject the reservation made by the diners. The status of upcoming reservation must be either “Pending” or “Edited”, otherwise the “Confirm” and “Reject” buttons will be disabled.

After admin confirm or reject a reservation, an email notification will be sent to diner’s email to notify the status of his or her reservation. If the email is sent successfully, the status of reservation will be updated in database and a message will be prompted. The content of email is different depending on either the reservation is confirmed or rejected. The example of email is shown in figure 6-15 and figure 6-16.

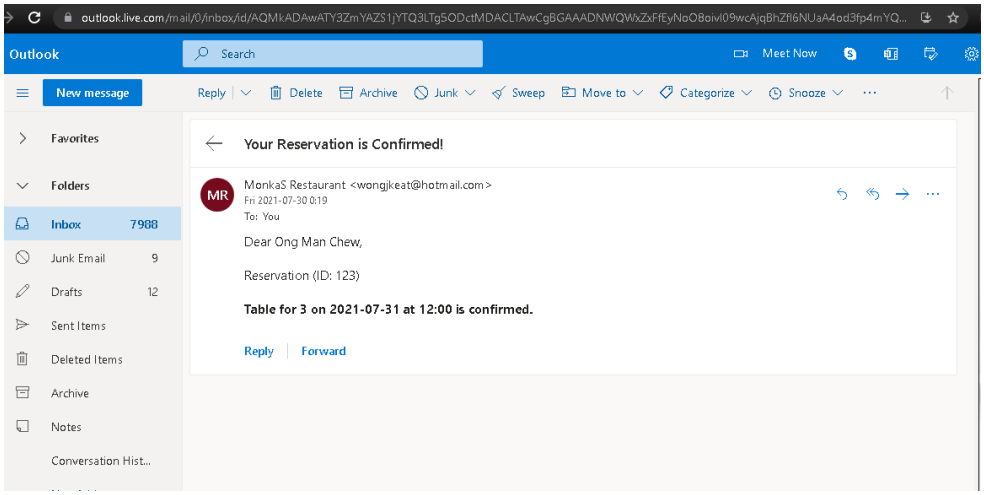



Figure 6-15: Email Notification of Reservation Status (Confirmed)

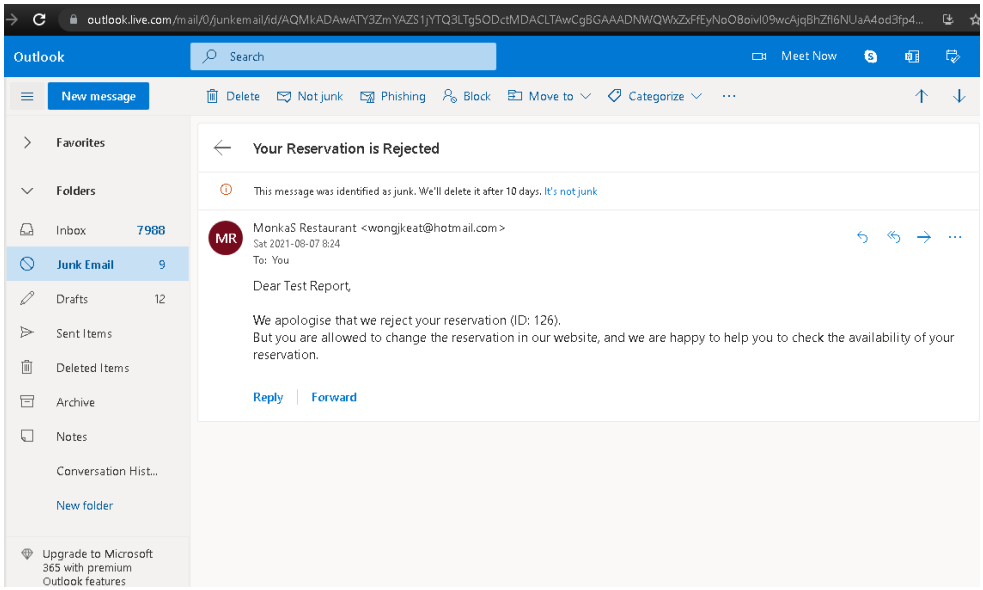



Figure 6-16: Email Notification of Reservation Status (Rejected)

### 6.3.4 Restaurant Menu Management

There are several features and functionalities available for admin to manage restaurant menu. The features include edit dish, add new dish, add or remove new dish's category, change dish's photo and activate or deactivate dish as shown in figure 6-17.

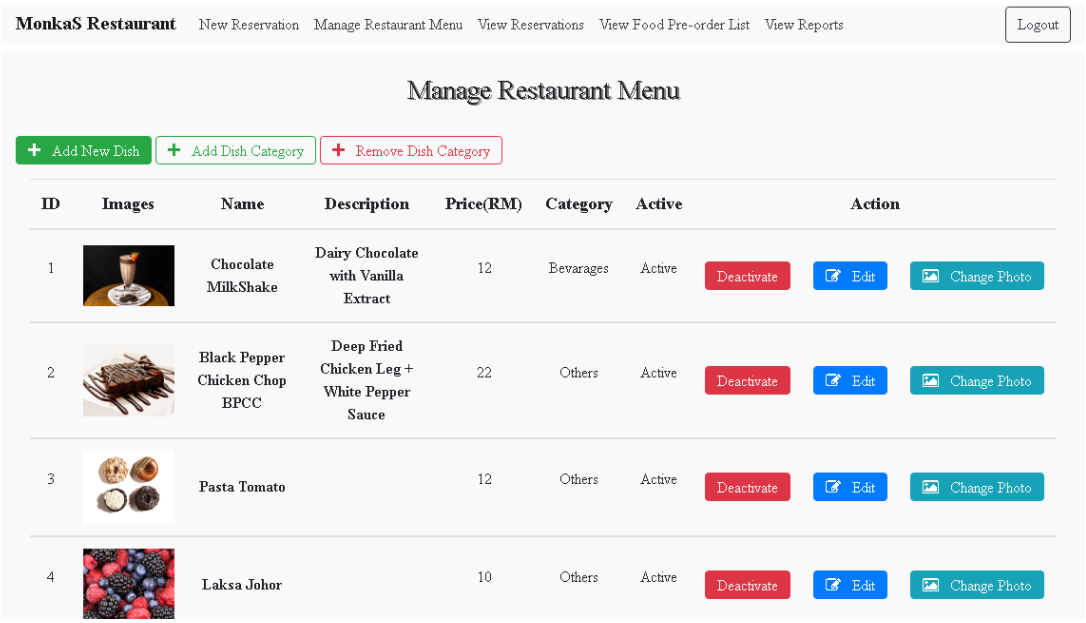



Figure 6-17: Restaurant Menu Management Screen

#### 6.3.4.1 Create new Dish

Admin is able to create a new dish by clicking the "Add New Dish" button on the top left corner of the restaurant menu. After clicking the button, the system displays a "New Dish" modal as shown in figure 6-18 for admin to fill in the new dish's information. Dish's name and price is required to fill in while its description and photo is optional.

The default value for dish category is "Others". A default photo is used a dish's photo as shown in figure 6-19 if the admin does not upload any image for the dish. The dish's photo uploaded will be verified by the system to check if the file size of photo uploaded is more than 2 Megabytes as well as the file type is image file or not.

After the dish is successfully created, a message, stating the dish is created successfully is prompted. The newly added dish is automatically activated and is available in restaurant menu.

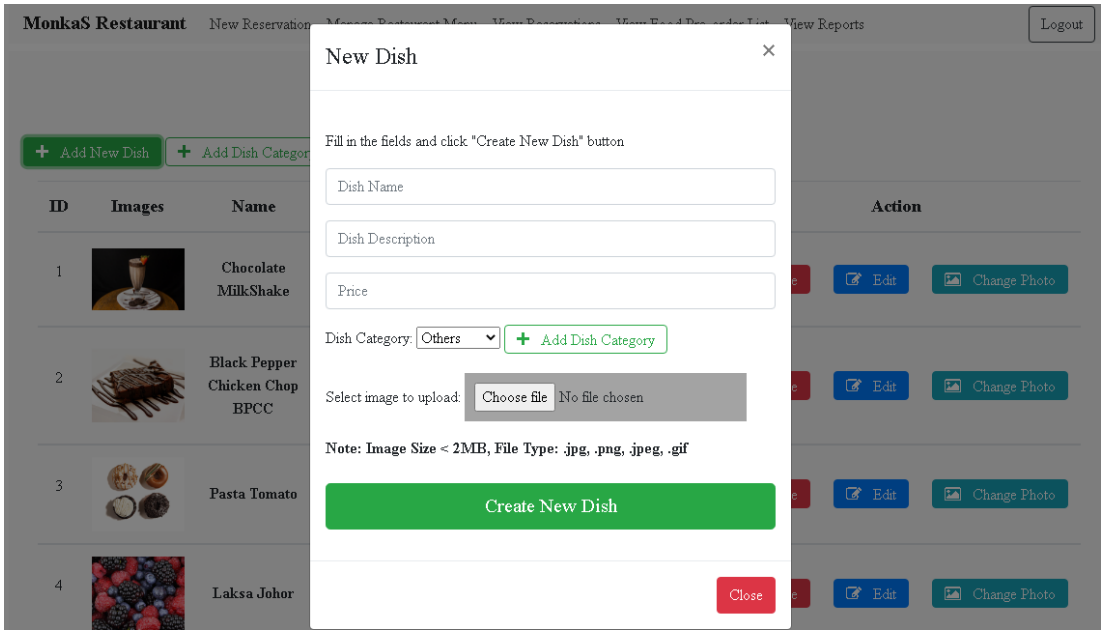



Figure 6-18: Create New Dish Modal

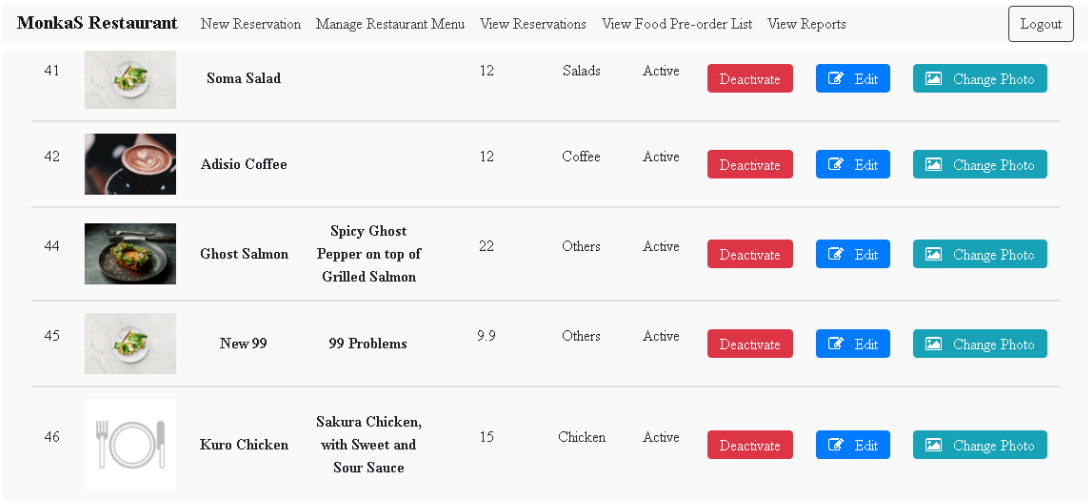



Figure 6-19: Default Image Used in Dish "Kuro Chicken"

### 6.3.4.2 Add/Remove Dish Category

In restaurant menu management, admin is able to add or remove dish's category, which is used to categorize the dish. Dish's category can be added when creating a new dish, where the button of "Add Dish Category" can be found in "New Dish" modal as shown in figure 6-18 above. The "Add Dish Category" and "Remove Dish Category" buttons can be found on the top left corner of the restaurant menu management. When both buttons are clicked, the modal will be displayed as shown in figure 6-20 and figure 6-21 for admin to perform add and remove dish category.

In “Remove Dish Category” modal, all the dish’s categories are retrieved from database and place in drop-down list for admin to select to remove it. The dish category “Others” is a default value for all the new dishes created, therefore it cannot be removed. After admin removes a specific dish category, all the dishes which are categorized into that removed dish category will be replaced with “Others” dish category.

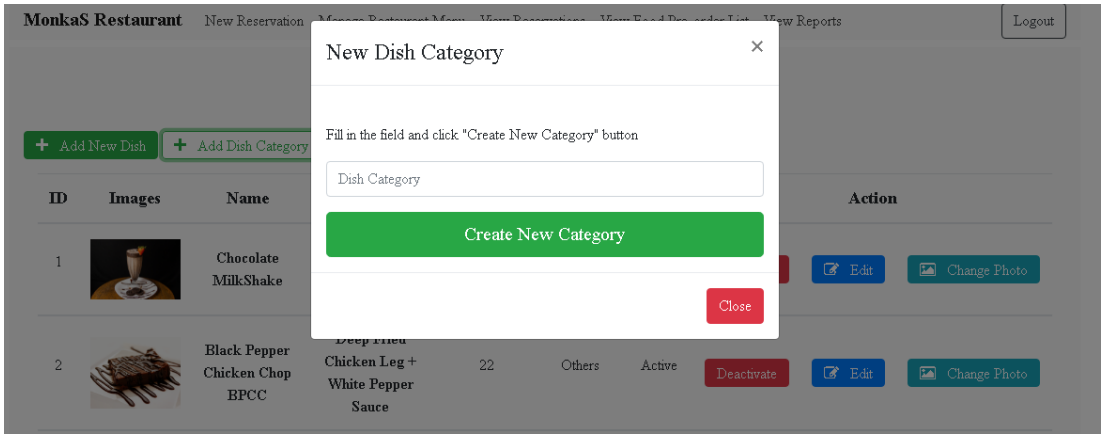



Figure 6-20: New Dish Category Modal

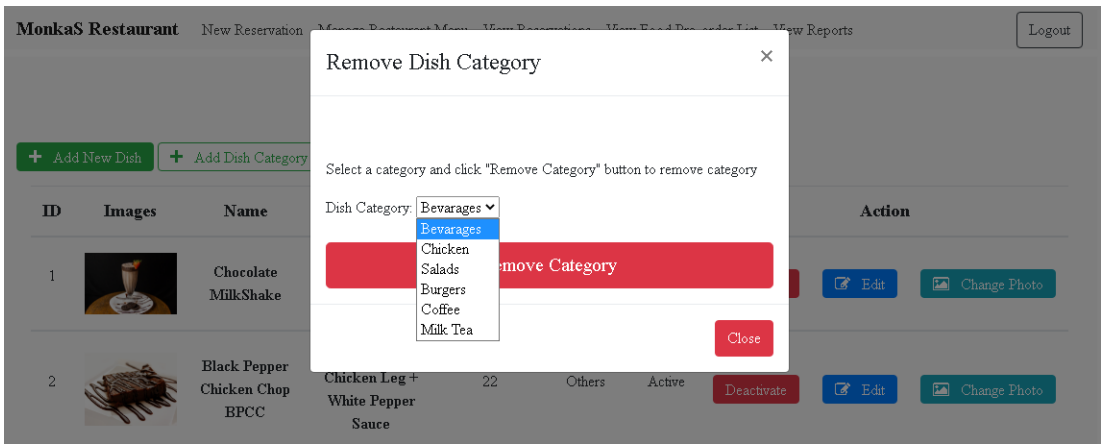



Figure 6-21: Remove Dish Category Modal

### 6.3.4.3 Activate/Deactivate Dish

Admin can activate an “Inactive” dish to make the dish is visible in restaurant menu and available for food pre-order. On the other hand, an “Active” dish can be de-activate so that the dish is unavailable in restaurant menu and food pre-order. After admin activate or de-activate a dish, system will update the dish information and prompt a

message stating the dish with its ID is activated or de-activated as shown in figure 6-22.

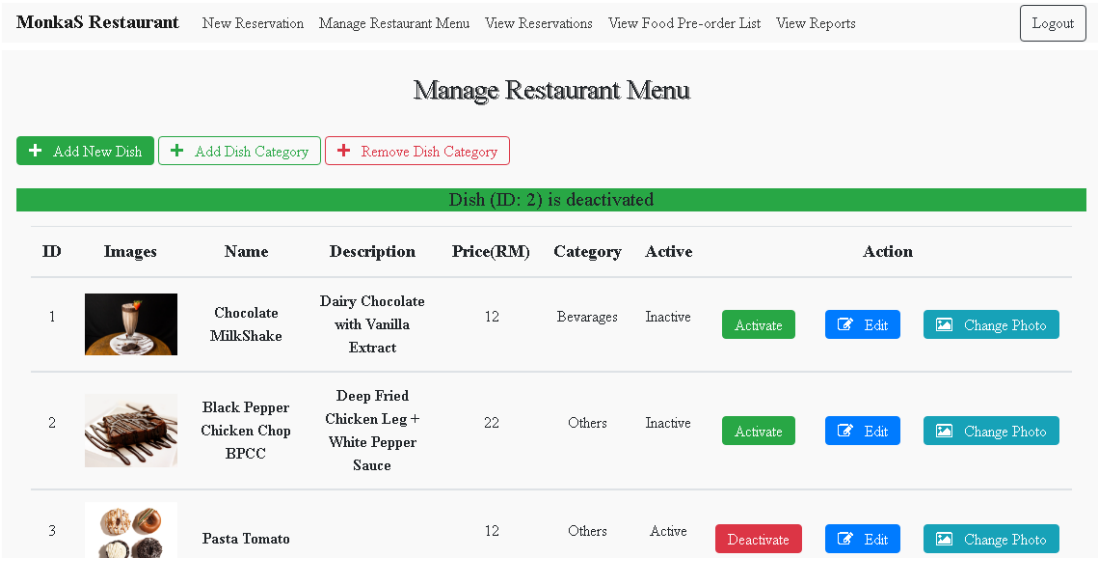



Figure 6-22: Activate/Deactivate Dish

#### 6.3.4.4 Edit Dish

When "Edit" button is clicked, system will retrieve the dish information with dish ID from database and display the dish information in "Edit Dish" modal as shown in figure 6-23 for admin to modify. The input fields for dish name and price cannot be left blank. Admin can click "Update Dish" button to confirm the modification and update the dish's information in database.

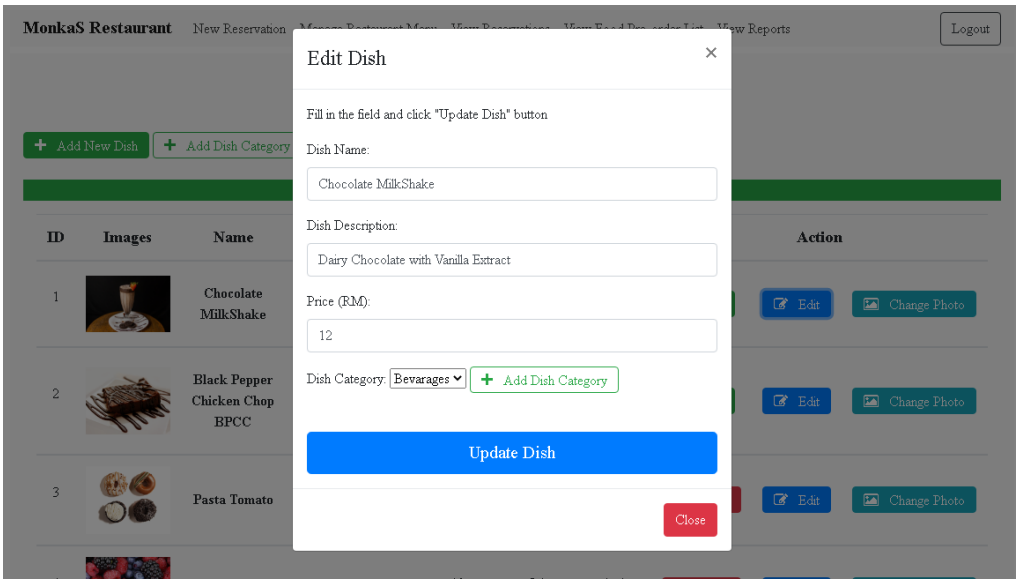



Figure 6-23: Edit Dish Modal

### 6.3.4.5 Change Dish Photo

Dish photo can be changed by clicking the "Change Photo" button. The "Change Dish Photo" modal will be displayed as shown in figure 6-24 for admin to choose an image file to change dish photo. After choosing the dish photo, admin can click "Change Photo" to upload the image file for verification. The system will prompt error message if file size is more than 2 Megabytes (MB) or file type is not image file.

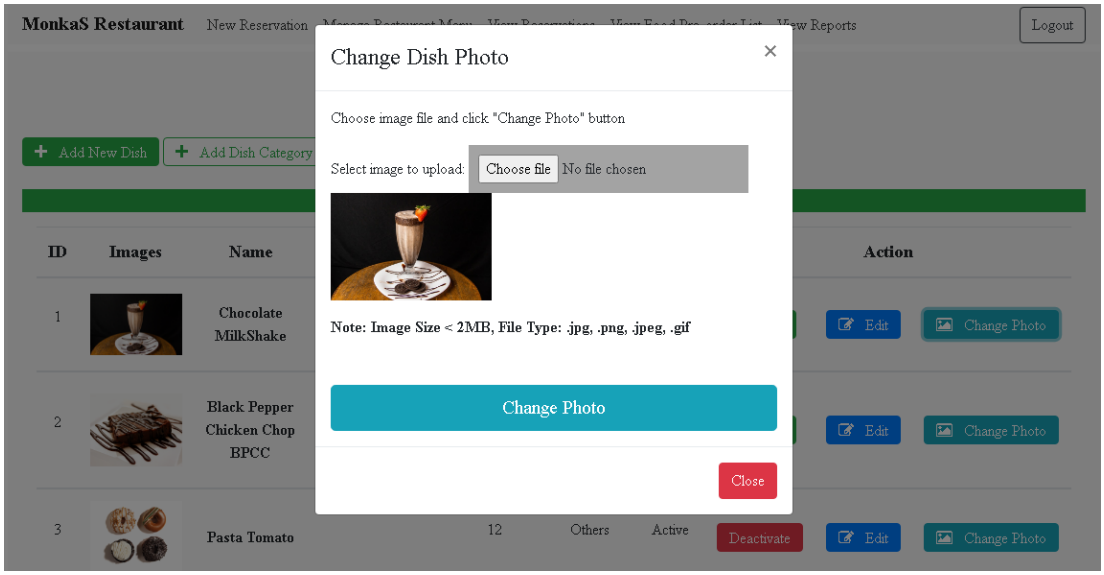



Figure 6-24: Change Dish Photo Modal

### 6.3.5 View Food Pre-Order List

Admin has the authorization to view all the diners' pre-ordered food list. Besides that, the system also allows admin to pre-order food as well as edit pre-ordered food list for all diners' upcoming reservations. The difference of food pre-order and editing between admin and diner is that admin can edit pre-ordered food list any time, while diner is restricted to edit or pre-order food at least 2 hours in advanced of the reservation's date and time.

Furthermore, admin is able to view the pre-ordered food list in the past reservation. The "Edit" and "Pre-Order" buttons are disabled so that the pre-ordered food list in the past reservation cannot be edited.

### 6.3.6 View Reporting

#### 6.3.6.1 Table Booking Frequency Report

Figure 6-25 below shows the web page where admin is able to select a report, report type, and report filtering to view the reports. For table booking frequency report, admin is able to select the report between two dates. After clicking the "View Report" button, the system will first verify if the two dates selected admin is valid. The "From" date must be earlier than the "To" date, otherwise an error message will be prompted as shown in figure 6-26. If two dates selected are valid, the system will get the report type and report filtering input by admin to retrieve the data from database to generate the desired report as shown in figure 6-27.

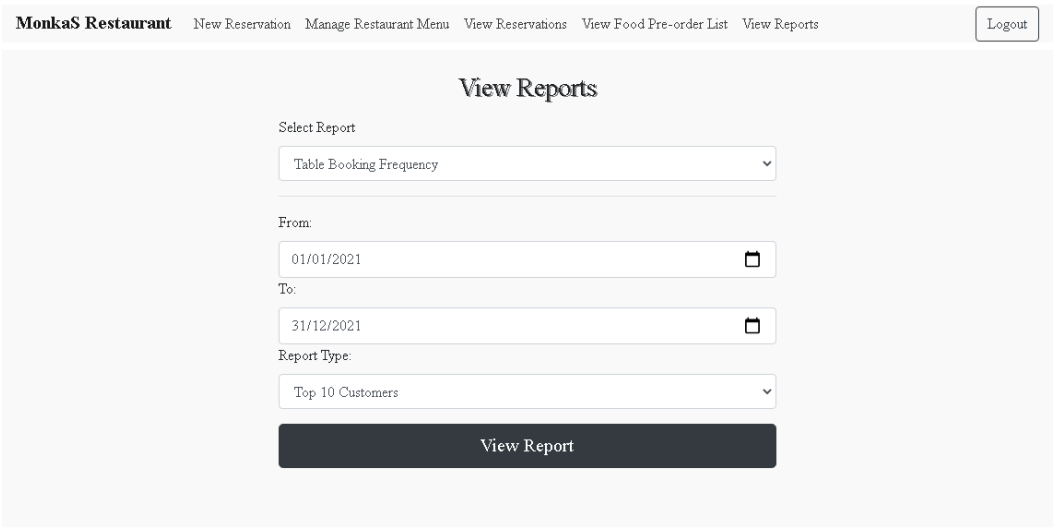



Figure 6-25: View Reports - Table Booking Frequency


Figure 6-26: Table Booking Frequency Report - Error Message

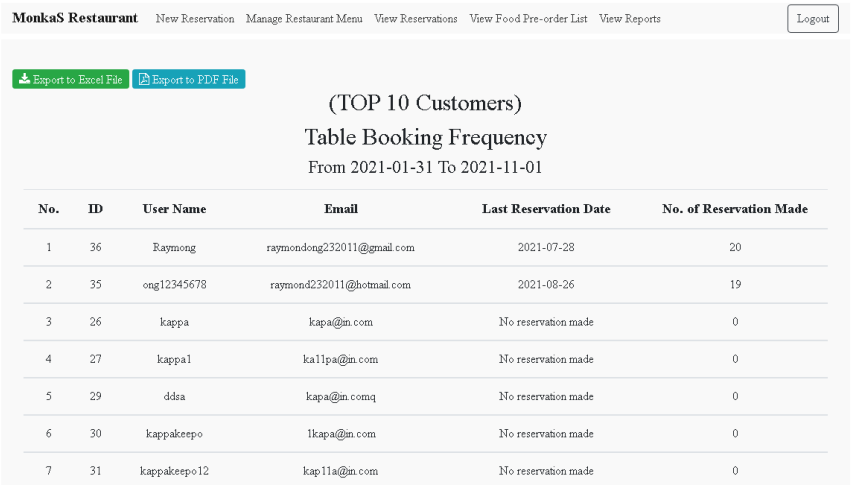



Figure 6-27: Table Booking Frequency Report – Successfully Generated

### 6.3.6.2 Most Popular Dishes (Pre-Ordered) Report

Figure 6-28 shows the report filtering selection for "Most Popular Dishes" Report, which allows admin to select the type of the report to view. Admin can click the "View Report" to view the report in browser's new tab as shown in figure 6-29.


Figure 6-28: View Reports - Most Popular Dishes

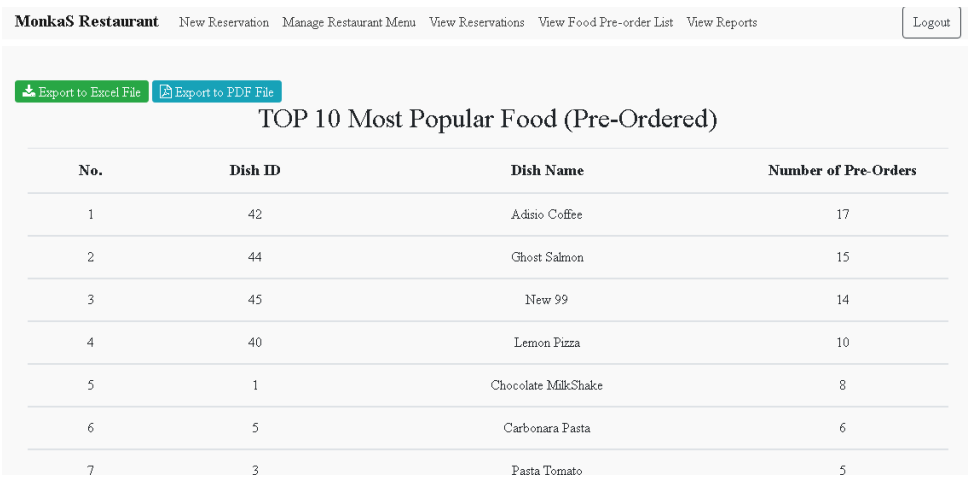



Figure 6-29: Most Popular Dish Report

### 6.3.7 Exporting to Excel/PDF File

As an admin role in restaurant reservation system, admin is able to export reservation list and reports to either Excel file or PDF file.

#### 6.3.7.1 Exporting Reservation List

Figure 6-30 below shows a modal in "View Reservation" screen, where admin is able to export the reservation list by selecting reservation and file type. To export the reservation list, admin can click the "Print / Export Reservation List" button on the top right corner of the reservation list table.

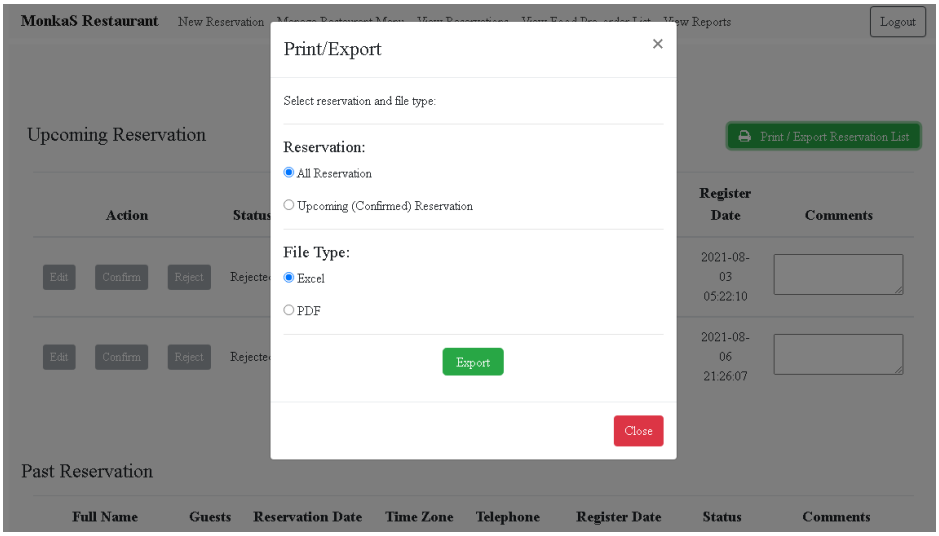



Figure 6-30: Print/Export Reservation List Modal in View Reservation Screen

If admin selects all reservation to export, the system will retrieve all the reservation including the past reservation from database and generate the file selected. On the other hand, if admin selects upcoming confirmed reservation, the system will retrieve the upcoming reservation with status "Confirmed" from database and generate the file selected.

Figure 6-31 below shows the PDF file, which contains all the reservations. Each page has 4 reservations record with detailed information. Moreover, figure 6-32 below shows the PDF file containing the upcoming reservations which are confirmed by admin. The font colour of status is different depending on the reservation's status.

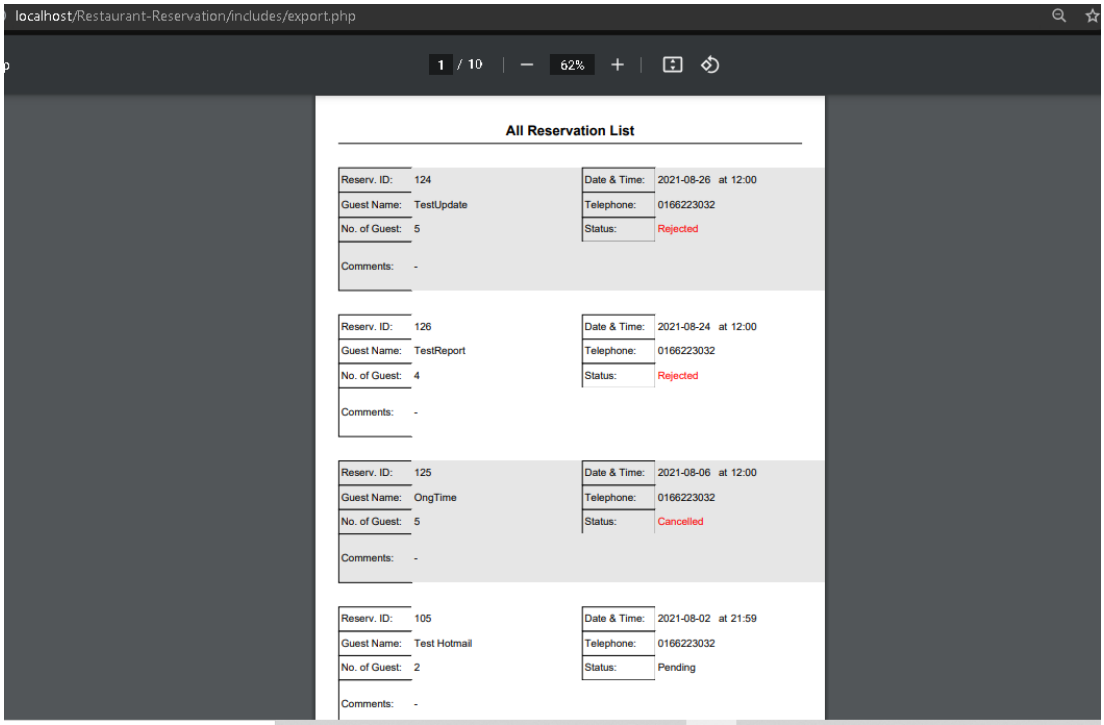



Figure 6-31: All Reservation List PDF File

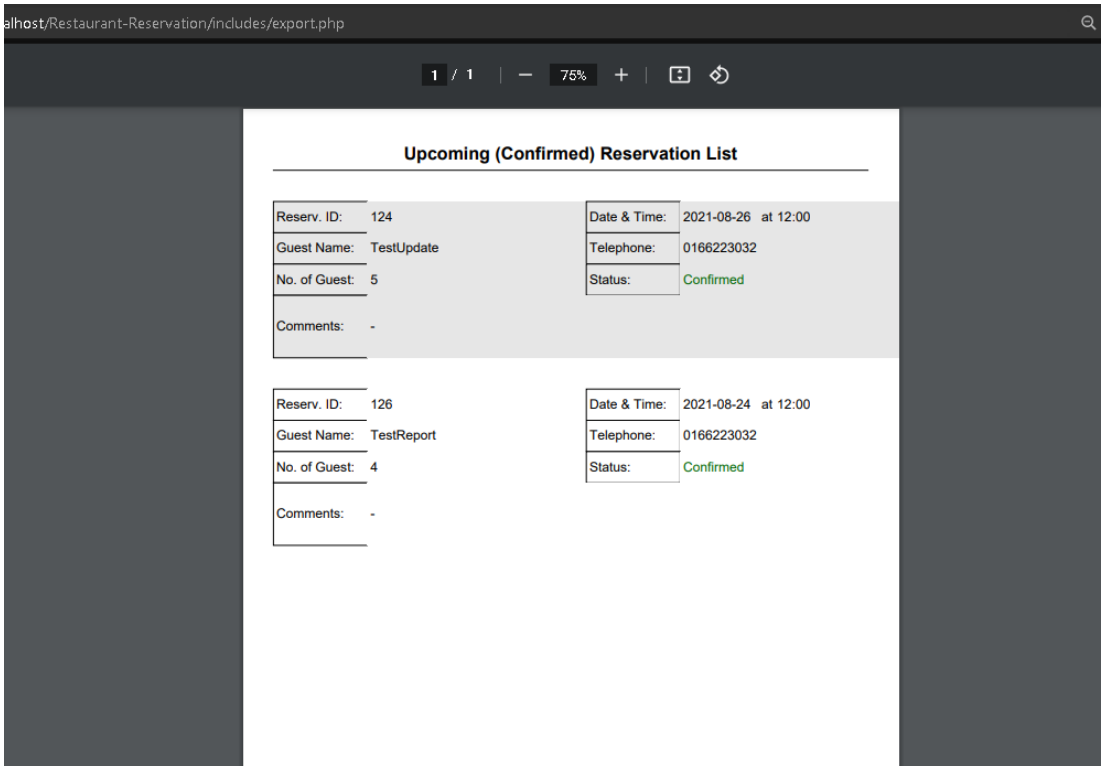
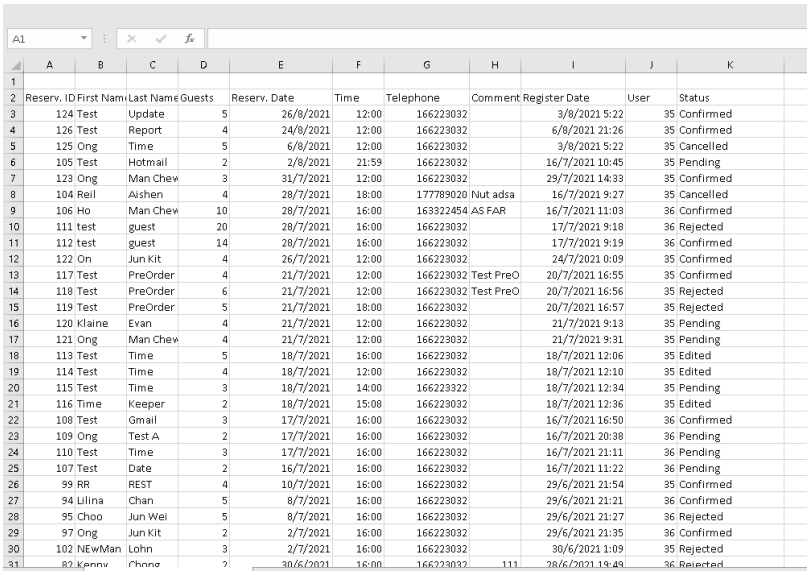


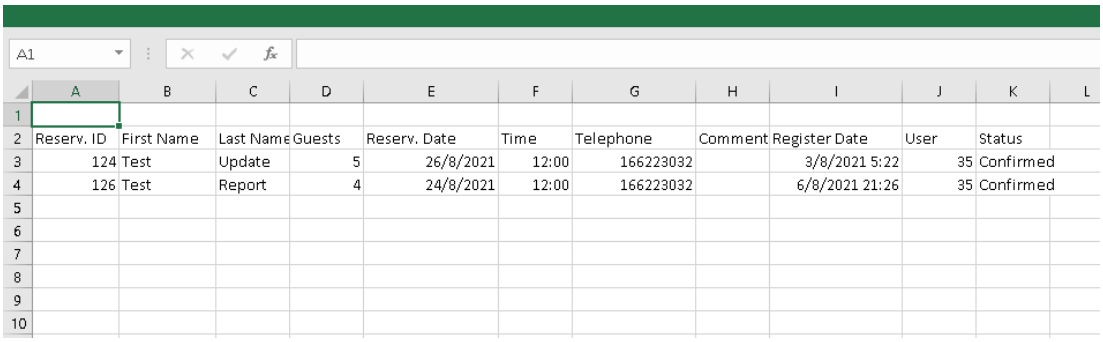

Figure 6-32: Upcoming (Confirmed) Reservation List PDF File

Figure 6-33 and figure 6-34 below show the excel files containing all reservation list and upcoming confirmed reservation list respectively.



| Reserv. ID | First Nam | Last Name | Guests | Reserv. Date | Time | Telephone | Comment | Register Date | User | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 124 | Test | Update | 5 | 26/8/2021 | 12:00 | 166223032 | | 3/8/2021 5:22 | 35 | Confirmed |
| 126 | Test | Report | 4 | 24/8/2021 | 12:00 | 166223032 | | 6/8/2021 21:26 | 35 | Confirmed |
| 125 | Ong | Time | 5 | 6/8/2021 | 12:00 | 166223032 | | 3/8/2021 5:22 | 35 | Cancelled |
| 105 | Test | Hotmail | 2 | 2/8/2021 | 21:59 | 166223032 | | 16/7/2021 10:45 | 35 | Pending |
| 123 | Ong | Man Chew | 3 | 31/7/2021 | 12:00 | 166223032 | | 29/7/2021 14:33 | 35 | Confirmed |
| 104 | Reil | Aishen | 4 | 28/7/2021 | 18:00 | 177789020 | Nut adsa | 16/7/2021 9:27 | 35 | Cancelled |
| 106 | Ho | Man Chew | 10 | 28/7/2021 | 16:00 | 163322454 | AS FAR | 16/7/2021 11:03 | 36 | Confirmed |
| 111 | test | guest | 20 | 28/7/2021 | 16:00 | 166223032 | | 17/7/2021 9:18 | 36 | Rejected |
| 112 | test | guest | 14 | 28/7/2021 | 16:00 | 166223032 | | 17/7/2021 9:19 | 36 | Confirmed |
| 122 | On | Jun Kit | 4 | 26/7/2021 | 12:00 | 166223032 | | 24/7/2021 0:09 | 35 | Confirmed |
| 117 | Test | PreOrder | 4 | 21/7/2021 | 12:00 | 166223032 | Test PreO | 20/7/2021 16:55 | 35 | Confirmed |
| 118 | Test | PreOrder | 6 | 21/7/2021 | 12:00 | 166223032 | Test PreO | 20/7/2021 16:56 | 35 | Rejected |
| 119 | Test | PreOrder | 5 | 21/7/2021 | 18:00 | 166223032 | | 20/7/2021 16:57 | 35 | Rejected |
| 120 | Klaine | Evan | 4 | 21/7/2021 | 12:00 | 166223032 | | 21/7/2021 9:13 | 35 | Pending |
| 121 | Ong | Man Chew | 4 | 21/7/2021 | 12:00 | 166223032 | | 21/7/2021 9:31 | 35 | Pending |
| 113 | Test | Time | 5 | 18/7/2021 | 16:00 | 166223032 | | 18/7/2021 12:06 | 35 | Edited |
| 114 | Test | Time | 4 | 18/7/2021 | 12:00 | 166223032 | | 18/7/2021 12:10 | 35 | Edited |
| 115 | Test | Time | 3 | 18/7/2021 | 14:00 | 166223322 | | 18/7/2021 12:34 | 35 | Pending |
| 116 | Time | Keeper | 2 | 18/7/2021 | 15:08 | 166223032 | | 18/7/2021 12:36 | 35 | Edited |
| 108 | Test | Gmail | 3 | 17/7/2021 | 16:00 | 166223032 | | 16/7/2021 16:50 | 36 | Confirmed |
| 109 | Ong | Test A | 2 | 17/7/2021 | 16:00 | 166223032 | | 16/7/2021 20:38 | 36 | Pending |
| 110 | Test | Time | 3 | 17/7/2021 | 16:00 | 166223032 | | 16/7/2021 21:11 | 36 | Pending |
| 107 | Test | Date | 2 | 16/7/2021 | 16:00 | 166223032 | | 16/7/2021 11:22 | 36 | Pending |
| 99 | RR | REST | 4 | 10/7/2021 | 16:00 | 166223032 | | 29/6/2021 21:54 | 35 | Confirmed |
| 94 | Lilina | Chan | 5 | 8/7/2021 | 16:00 | 166223032 | | 29/6/2021 21:21 | 36 | Confirmed |
| 95 | Choo | Jun Wei | 5 | 8/7/2021 | 16:00 | 166223032 | | 29/6/2021 21:27 | 36 | Rejected |
| 97 | Ong | Jun Kit | 2 | 2/7/2021 | 16:00 | 166223032 | | 29/6/2021 21:35 | 36 | Confirmed |
| 102 | NEwMan | Lohn | 3 | 2/7/2021 | 16:00 | 166223032 | | 30/6/2021 1:09 | 35 | Rejected |
| 82 | Kenny | Chong | 2 | 30/6/2021 | 16:00 | 166223032 | 111 | 28/6/2021 19:49 | 36 | Rejected |

Figure 6-33: All Reservation List Excel File



| Reserv. ID | First Name | Last Name | Guests | Reserv. Date | Time | Telephone | Comment | Register Date | User | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 124 | Test | Update | 5 | 26/8/2021 | 12:00 | 166223032 | | 3/8/2021 5:22 | 35 | Confirmed |
| 126 | Test | Report | 4 | 24/8/2021 | 12:00 | 166223032 | | 6/8/2021 21:26 | 35 | Confirmed |

Figure 6-34: Upcoming Confirmed Reservation List Excel File

### 6.3.7.2 Exporting Report

In “View Report” web page, admin can export the reports to both Excel file or PDF file. After admin clicks the “View Report” and the system successfully generate the reports, admin can click either “Export to Excel File” or “Export to PDF File” buttons which are available on top left corner of the report as shown in figure 6-35 to perform exporting report. Figure 6-36 and figure 6-37 are the samples of PDF file, while figure 6-38 and figure 6-39 are the samples of Excel file for Table Booking Frequency report and Most Popular Dish report respectively.


Figure 6-35: Export Buttons on Top Left Corner of Report

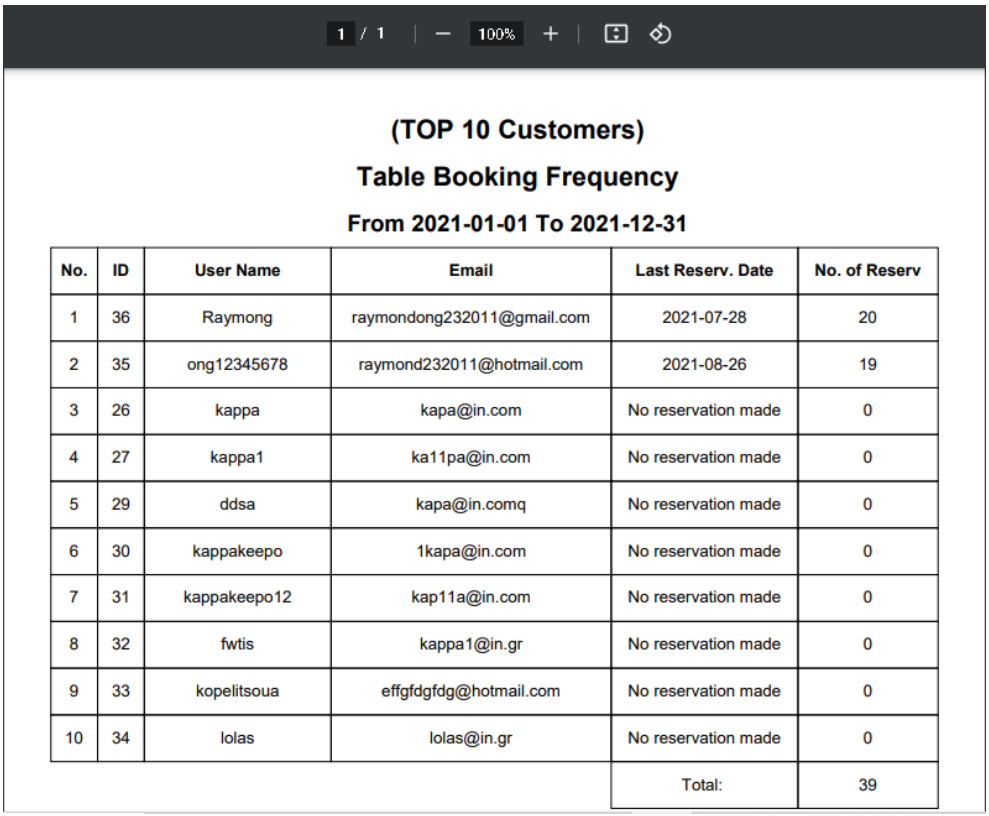
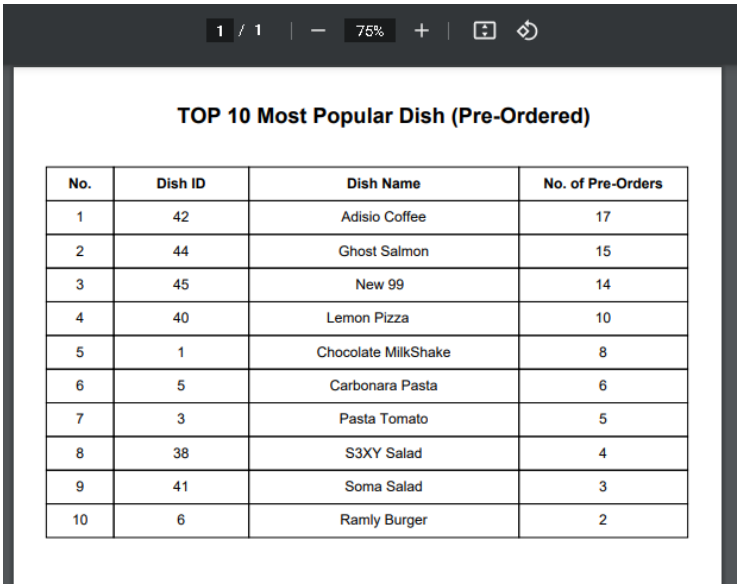


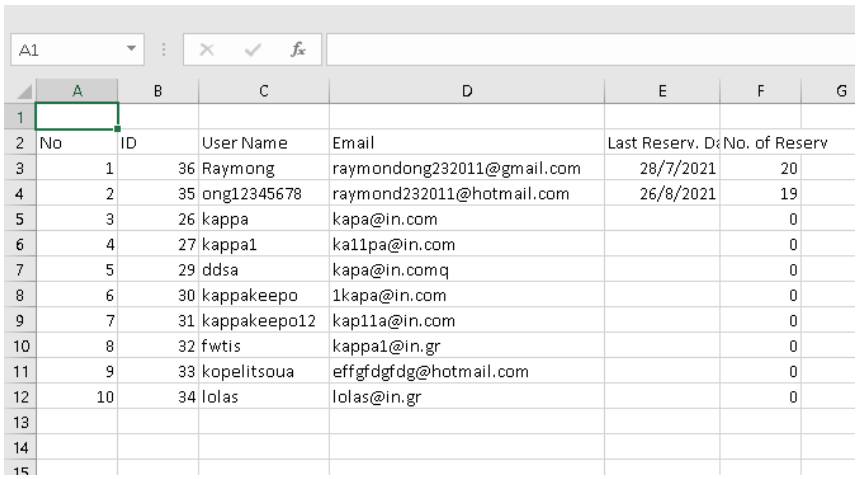

Figure 6-36: Table Booking Frequency Report in PDF File



**TOP 10 Most Popular Dish (Pre-Ordered)**

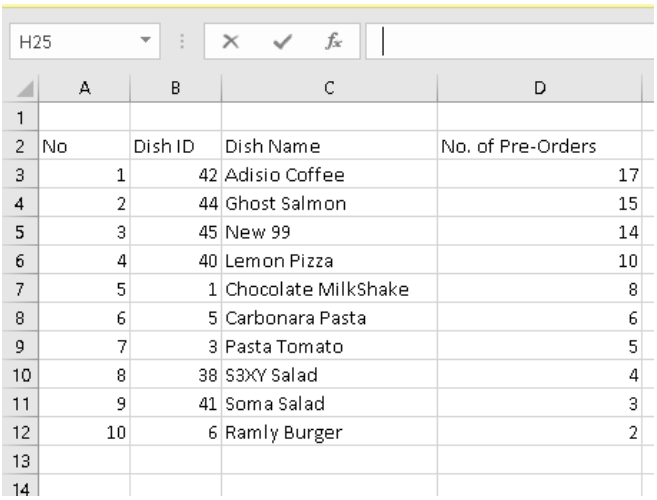
| No. | Dish ID | Dish Name | No. of Pre-Orders |
|---|---|---|---|
| 1 | 42 | Adisio Coffee | 17 |
| 2 | 44 | Ghost Salmon | 15 |
| 3 | 45 | New 99 | 14 |
| 4 | 40 | Lemon Pizza | 10 |
| 5 | 1 | Chocolate MilkShake | 8 |
| 6 | 5 | Carbonara Pasta | 6 |
| 7 | 3 | Pasta Tomato | 5 |
| 8 | 38 | S3XY Salad | 4 |
| 9 | 41 | Soma Salad | 3 |
| 10 | 6 | Ramly Burger | 2 |

Figure 6-37: Most Popular Dish Report in PDF File



| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | | | | | | |
| 2 | No | ID | User Name | Email | Last Reserv. D | No. of Reserv |
| 3 | 1 | 36 | Raymong | raymondong232011@gmail.com | 28/7/2021 | 20 |
| 4 | 2 | 35 | ong12345678 | raymond232011@hotmail.com | 26/8/2021 | 19 |
| 5 | 3 | 26 | kappa | kapa@in.com | | 0 |
| 6 | 4 | 27 | kappa1 | ka11pa@in.com | | 0 |
| 7 | 5 | 29 | ddsa | kapa@in.comq | | 0 |
| 8 | 6 | 30 | kappakeepo | 1kapa@in.com | | 0 |
| 9 | 7 | 31 | kappakeepo12 | kap11a@in.com | | 0 |
| 10 | 8 | 32 | fwtis | kappa1@in.gr | | 0 |
| 11 | 9 | 33 | kopelitsoua | effgfdgfdg@hotmail.com | | 0 |
| 12 | 10 | 34 | lolas | lolas@in.gr | | 0 |
| 13 | | | | | | |
| 14 | | | | | | |

Figure 6-38: Table Booking Frequency Report in Excel File



| | A | B | C | D |
|---|---|---|---|---|
| 1 | | | | |
| 2 | No | Dish ID | Dish Name | No. of Pre-Orders |
| 3 | 1 | 42 | Adisio Coffee | 17 |
| 4 | 2 | 44 | Ghost Salmon | 15 |
| 5 | 3 | 45 | New 99 | 14 |
| 6 | 4 | 40 | Lemon Pizza | 10 |
| 7 | 5 | 1 | Chocolate MilkShake | 8 |
| 8 | 6 | 5 | Carbonara Pasta | 6 |
| 9 | 7 | 3 | Pasta Tomato | 5 |
| 10 | 8 | 38 | S3XY Salad | 4 |
| 11 | 9 | 41 | Soma Salad | 3 |
| 12 | 10 | 6 | Ramly Burger | 2 |
| 13 | | | | |
| 14 | | | | |

Figure 6-39: Most Popular Dish Report in Excel File

# CHAPTER 7

# SYSTEM TESTING

## 7.1 Introduction

In this chapter, there are four types of testing to be covered and included in the system to ensure the functional requirements and non-functional requirements are being met and within the scope of this project. The testing includes unit testing, integration testing, browser compatibility testing and user acceptance testing. Due to Movement Control Operation (MCO), it is difficult to involve participants in user acceptance testing, and therefore this testing will be conducted via online. The online tool for browser compatibility, Lambda Test has limited use times. Therefore, it will be used to test Safari and Internet Explorer browser only, while for Chrome, Firefox, and Edge browser, these browsers will be installed manually for browser compatibility testing.

## 7.2 Test Strategy

### 7.2.1 Test Scope

In scope (Components that are tested):

- All functionalities and features in the restaurant reservation system
- Browser Compatibility
- User Acceptance Testing

Out of scope (Components that are tested):

- Security Testing
- Performance Testing
- Reliability Testing
- Installation Testing
- Documentation Testing

### 7.2.2 Testing Type

The testing type includes:

- Unit Testing
- Integration Testing
- Browser Compatibility Testing
- User Acceptance Testing

### 7.2.3 Test Tools

Manual Testing:

- Unit Testing
- Integration Testing
- Browser Compatibility Testing
- User Acceptance Testing

Online Tools for Browser Compatibility Testing:

- Lambda Test (For testing Safari and Internet Explorer browser)

## 7.3 Unit Testing

### 7.3.1 Unit Test Cases and Results

Table 7-1: Unit Test Case for Diner Account Sign Up

| **No.** | | 1 | | **Plan Date** | | 9 August 2021 | |
|---|---|---|---|---|---|---|---|
| **Module** | | Diner Module | | **Planned By** | | Ong Jun Kit | |
| **Test Title** | | Account Sign Up | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | | Ong Jun Kit | |
| **Pre-condition(s)** | | - | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_SIGNUP_01 | Sign up account with valid username, email and password | 1. Click “Sign Up” button<br>2. Enter user name, email, password and confirm password<br>3. Tick T&C checkbox<br>4. Click “Register Now” button | 1. Valid user name with no spacing.<br>2. Valid email with correct format<br>3. Valid pass-word with at least 6 characters | Account is signed up successfully. Account signed up successful message is prompted. | Diner account will be created and added into database. | Account is signed up successfully. Account signed up successful message is prompted. | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Sign up account with invalid username, email and password | 1. Click “Sign Up” button<br>2. Enter invalid user name, email, password and confirm password<br>3. Tick T&C checkbox<br>4. Click “Register Now” button | 1. Invalid user name with some spacing.<br>2. Valid email with correct format<br>3. Valid pass-word with at least 6 characters | An error message of “Invalid username. No Spacing is allowed. Please try again” is prompted | - | An error message of “Invalid username. No Spacing is allowed. Please try again” is prompted | Pass |
| | Sign up account with valid username, wrongly formatted email and password | 1. Click “Sign Up” button<br>2. Enter user name, wrongly formatted email, password and confirm password<br>3. Tick T&C checkbox | 1. Valid user name with no spacing.<br>2. Invalid email with incorrect format | An error message of “Invalid Email. Please try again” is prompted | - | An error message of “Invalid Email. Please try again” is prompted | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 4. Click “Register Now” button | 3. Valid pass-word with at least 6 characters | | | | |
| | Sign up account with valid username, email and invalid password | 1. Click “Sign Up” button<br>2. Enter user name, email, invalid password with less than 6 characters and confirm password<br>3. Tick T&C checkbox<br>4. Click “Register Now” button | 1. Valid user name with no spacing.<br>2. Invalid email with incorrect format<br>3. Valid pass-word with less than 6 characters | An error message of “Invalid password. Password must have more than 6 characters Please try again” is prompted | - | An error message of “Invalid password. Password must have more than 6 characters Please try again” is prompted | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Sign up account with valid username, email and valid password, but not match with confirm password | 1. Click “Sign Up” button<br>2. Enter user name, email, invalid password and different confirm password<br>3. Tick T&C checkbox<br>4. Click “Register Now” button | 1. Valid user name with no spacing.<br>2. Valid email with correct format<br>3. Valid pass-word with at least 6 characters<br>4. Random confirm password | An error message of “Password must match. Please try again” is prompted | - | An error message of “Password must match. Please try again” is prompted | Pass |
| | Sign up account with valid registered username, email and valid password | 1. Click “Sign Up” button<br>2. Enter registered user name, email, valid password<br>3. Tick T&C checkbox | 1. Valid but registered user name.<br>2. Valid email with correct format | An error message of “Username or email is taken Please try again” is prompted | - | An error message of “Username or email is taken Please try again” is prompted | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 4. Click “Register Now” button | 3. Valid pass-word with at least 6 characters | | | | |
| | Sign up account with valid username, registered email and valid password | 1. Click “Sign Up” button<br>2. Enter user name, registered email, valid password<br>3. Tick T&C checkbox<br>4. Click “Register Now” button | 1. Valid user name with no spacing.<br>2. Valid and correct format but registered email<br>3. Valid pass-word with at least 6 characters | An error message of “Username or email is taken Please try again” is prompted | - | An error message of “Username or email is taken Please try again” is prompted | Pass |

Table 7-2: Unit Test Case for Diner Login Account

| **No.** | | 2 | | **Plan Date** | 9 August 2021 | | |
|---|---|---|---|---|---|---|---|
| **Module** | | Diner Module | | **Planned By** | Ong Jun Kit | | |
| **Test Title** | | Diner Login Account | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | Ong Jun Kit | | |
| **Pre-condition(s)** | | 1. Diner already have a registered diner account.<br>2. Diner must login account with correct password and either registered username or email. | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_LOGIN_001 | Diner login account with valid registered email and correct password. | 1. Clicks “Login” button<br>2. Enter registered email and correct password<br>3. Click “Log In” button | 1. Valid registered email<br>2. Correct password | Successfully login account | Diner will be redirected to “New Reservation” web page | Successfully login account | Pass |
| | Diner login account with valid registered username and correct password. | 1. Clicks “Login” button | 1. Valid registered user-name | Successfully login account | Diner will be redirected to “New | Successfully login account | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2. Enter registered username and correct password<br>3. Click “Log In” button | 2. Correct password | | Reservation” web page | | |
| | Diner login account with valid but not registered email and correct password. | 1. Clicks “Login” button<br>2. Enter unregistered email and correct password<br>3. Click “Log In” button | 1. Unregistered email<br>2. Correct password | An error message of “Username or email not found. Please try again!” is prompted | - | An error message of “Username or email not found. Please try again!” is prompted | Pass |
| | Diner login account with valid but not registered username and correct password. | 1. Clicks “Login” button<br>2. Enter unregistered username and correct password | 1. Unregistered username<br>2. Correct password | An error message of “Username or email not found. Please try | - | An error message of “Username or email not found. Please | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 3. Click “Log In” button | | again!” is prompted | | try again!” is prompted | |
| | Diner login account with valid registered email but incorrect password. | 1. Clicks “Login” button<br>2. Enter registered email and incorrect password<br>3. Click “Log In” button | 1. Valid registered email<br>2. Incorrect password | An error message of “Wrong Password. Please try again!” is prompted | - | An error message of “Wrong Password. Please try again!” is prompted | Pass |

Table 7-3: Unit Test Case for Admin Login Account

| **No.** | | 3 | | **Plan Date** | 9 August 2021 | | |
|---|---|---|---|---|---|---|---|
| **Module** | | Admin Module | | **Planned By** | Ong Jun Kit | | |
| **Test Title** | | Admin Login Account | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | Ong Jun Kit | | |
| **Pre-condition(s)** | | Admin must own the admin account to access the system as admin role | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_ADLOGIN_002 | Admin login account with valid admin's email and correct password. | 1. Clicks "Login" button<br>2. Enter admin email and correct password<br>3. Click "Log In" button | 1. Valid admin email<br>2. Correct password | Successfully login admin account | Admin will be redirected to "View Reservation List" web page | Successfully login admin account | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Admin login account with valid admin's username and correct password. | 1. Clicks "Login" button<br>2. Enter admin username and correct password<br>3. Click "Log In" button | 1. Valid admin user-name<br>2. Correct password | Successfully login admin account | Admin will be redirected to "View Reservation List" web page | Successfully login admin account | Pass |
| | Admin login account with valid but not admin and unregistered email and correct password. | 1. Clicks "Login" button<br>2. Enter unregistered (not admin's) email and correct password<br>3. Click "Log In" button | 1. Not admin and unregistered email<br>2. Correct password | An error message of "Username or email not found. Please try again!" is prompted | - | An error message of "Username or email not found. Please try again!" is prompted | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Admin login account with valid but not admin and unregistered username and correct password. | 1. Clicks “Login” button<br>2. Enter unregistered (not admin’s) username and correct password<br>3. Click “Log In” button | 1. Not admin and unregistered username<br>2. Correct password | An error message of “Username or email not found. Please try again!” is prompted | - | An error message of “Username or email not found. Please try again!” is prompted | Pass |
| | Admin login account with valid admin’s email but incorrect password. | 1. Clicks “Login” button<br>2. Enter admin’s email and incorrect password<br>3. Click “Log In” button | 1. Valid admin’s email<br>2. Incorrect password | An error message of “Wrong Password. Please try again!” is prompted | - | An error message of “Wrong Password. Please try again!” is prompted | Pass |

Table 7-4: Unit Test Case for Diner Make New Reservation

| **No.** | | 4 | | **Plan Date** | 9 August 2021 | | |
|---|---|---|---|---|---|---|---|
| **Module** | | Admin/Diner Module | | **Planned By** | Ong Jun Kit | | |
| **Test Title** | | Make New Reservation | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | Ong Jun Kit | | |
| **Pre-condition(s)** | | Diner must own and login the account. | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_NEW RESERV _001 | User make a reservation by filling in all the valid information. | 1. Enter valid first name and last name<br>2. Select valid date<br>3. Select number of guests<br>4. Enter contact number<br>5. Tick T&C checkbox | 1. Valid first name and last name (without digit)<br>2. Valid date<br>3. Valid number of guests<br>4. Valid contact number (without letters) | Reservation is made successfully. A message of "Reservation made successfully" is prompted. | System will prompt a confirmation message asking if user wants to pre-order food for reservation. | Reservation is made successfully. A message of "Reservation made successfully" | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 6. Click “Submit Reservation” button | | | | | |
| | User make a reservation by filling in all the valid information, but invalid first name. | 1. Enter valid last name but invalid first name<br>2. Select valid date<br>3. Select number of guests<br>4. Enter contact number<br>5. Tick T&C checkbox<br>6. Click “Submit Reservation” button | 1. Invalid first name (includes digit in word) but valid last name<br>2. Valid date<br>3. Valid number of guests<br>4. Valid contact number (without letters) | An error message of “Invalid First Name. Please try again!” is prompted. | - | An error message of “Invalid First Name. Please try again!” is prompted. | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | User make a reservation by filling in all the valid information, but invalid last name. | 1. Enter valid first name but invalid last name<br>2. Select valid date<br>3. Select number of guests<br>4. Enter contact number<br>5. Tick T&C checkbox<br>6. Click “Submit Reservation” button | 1. Invalid last name (includes digit in word) but valid first name<br>2. Valid date<br>3. Valid number of guests<br>4. Valid contact number (without letters) | An error message of “Invalid Last Name. Please try again!” is prompted. | - | An error message of “Invalid Last Name. Please try again!” is prompted. | Pass |
| | User make a reservation by filling in all the valid | 1. Enter valid first name and last name | 1. Valid last name and first name | An error message of “Invalid reservation | - | An error message of “Invalid reservation | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | information, but invalid date. | 2. Select invalid date<br>3. Select number of guests<br>4. Enter contact number<br>5. Tick T&C checkbox<br>6. Click “Submit Reservation” button | 2. Invalid date (one day before current date)<br>3. Valid number of guests<br>4. Valid contact number (without letters) | date. Please select date later than today or today (current date)” is prompted. | | date. Please select date later than today or today (current date)” is prompted. | |
| | User make a reservation by filling in all the valid information, but invalid contact number. | 1. Enter valid first name and last name<br>2. Select invalid date<br>3. Select number of guests | 1. Valid last name and first name<br>2. Valid date<br>3. Valid number of guests<br>4. Invalid contact number (include letters A-z) | An error message of “Invalid contact number. Please try again!” is prompted. | - | An error message of “Invalid contact number. Please try again!” is prompted. | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 4. Enter invalid contact number<br>5. Tick T&C checkbox<br>6. Click "Submit Reservation" button | | | | | |

Table 7-5: Unit Test Case for Diner Cancel Reservation

| **No.** | | 5 | | **Plan Date** | 9 August 2021 | | |
|---|---|---|---|---|---|---|---|
| **Module** | | Diner Module | | **Planned By** | Ong Jun Kit | | |
| **Test Title** | | Cancel Reservation | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | Ong Jun Kit | | |
| **Pre-condition(s)** | | Diner must have at least one upcoming reservation.<br>The reservation status must be "Edited", "Confirmed", or "Pending" | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_CR_001 | Diner cancels the reservation with status "Pending". | Click "Cancel" button. | - | A message "Cancellation | Diner can no longer perform any action on cancelled reservation. | A message "Cancellation | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | successful" is prompted | | successful" is prompted | |
| | Diner cancels the reservation with status "Edited". | Click "Cancel" button. | - | A message "Cancellation successful" is prompted | Diner can no longer perform any action on cancelled reservation. | A message "Cancellation successful" is prompted | Pass |
| | Diner cancels the reservation with status "Confirmed". | Click "Cancel" button. | - | A message "Cancellation successful" is prompted | Diner can no longer perform any action on cancelled reservation. | A message "Cancellation successful" is prompted | Pass |
| | Diner cancels the reservation with status "Rejected". | Click "Cancel" button. | - | "Cancel" button cannot be clicked because it is disabled. | - | "Cancel" button cannot be clicked because it is disabled. | Pass |
| | Diner cancels the reservation with status "Cancelled". | Click "Cancel" button. | - | "Cancel" button cannot be clicked because it is disabled. | - | "Cancel" button cannot be clicked because it is disabled. | Pass |

Table 7-6: Unit Test Case for Edit Reservation

| **No.** | | 6 | | **Plan Date** | 9 August 2021 | | |
|---|---|---|---|---|---|---|---|
| **Module** | | Admin/Diner Module | | **Planned By** | Ong Jun Kit | | |
| **Test Title** | | Edit Reservation | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | Ong Jun Kit | | |
| **Pre-condition(s)** | | 1. Admin or diner must own and login the account.<br>2. The system must have at least one upcoming reservation.<br>3. User with diner role can only be allowed to edit reservation 2 hours in advance of reservation date and time.<br>4. The reservation status must be either "Confirmed", "Pending", or "Edited". | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_EDIT RESERV _001 | User edits a reservation by filling in all the valid information. | 1. Enter valid first name and last name<br>2. Select valid date<br>3. Select number of guests<br>4. Enter contact number<br>5. Click "Modify Reservation" button | 1. Valid first name and last name (without digit)<br>2. Valid date<br>3. Valid number of guests<br>4. Valid contact number (without letters) | Reservation is modified successfully. A message of "Edit successful" is prompted. | The reservation status is changed to "Edited". | Reservation is modified successfully. A message of "Edit successful" is prompted. | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | User edits a reservation by filling in all the valid information, but invalid first name. | 1. Enter valid last name but invalid first name<br>2. Select valid date<br>3. Select number of guests<br>4. Enter contact number<br>5. Click “Modify Reservation” button | 1. Invalid first name (includes digit in word) but valid last name<br>2. Valid date<br>3. Valid number of guests<br>4. Valid contact number (without letters) | An error message of “Invalid First Name. Please try again!” is prompted. | - | An error message of “Invalid First Name. Please try again!” is prompted. | Pass |
| | User edits a reservation by filling in all the valid information, but invalid last name. | 1. Enter valid first name but invalid last name<br>2. Select valid date<br>3. Select number of guests<br>4. Enter contact number | 1. Invalid last name (includes digit in word) but valid first name<br>2. Valid date<br>3. Valid number of guests | An error message of “Invalid Last Name. Please try again!” is prompted. | - | An error message of “Invalid Last Name. Please try again!” is prompted. | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 5. Click “Modify Reservation” button | 4. Valid contact number (without letters) | | | | |
| | User edits a reservation by filling in all the valid information, but invalid date. | 1. Enter valid first name and last name<br>2. Select invalid date<br>3. Select number of guests<br>4. Enter contact number<br>5. Click “Modify Reservation” button | 1. Valid last name and first name<br>2. Invalid date (one day before current date)<br>3. Valid number of guests<br>4. Valid contact number (without letters) | An error message of “Invalid reservation date. Please select date later than today or today (current date)” is prompted. | - | An error message of “Invalid reservation date. Please select date later than today or today (current date)” is prompted. | Pass |
| | User edits a reservation by filling in all the valid information, | 1. Enter valid first name and last name<br>2. Select invalid date | 1. Valid last name and first name<br>2. Valid date<br>3. Valid number of guests | An error message of “Invalid contact number. Please | - | An error message of “Invalid contact number. Please | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | but invalid contact number. | 3. Select number of guests<br>4. Enter invalid contact number<br>5. Click “Modify Reservation” button | 4. Invalid contact number (include letters A-z) | try again!” is prompted. | | try again!” is prompted. | |

Table 7-7: Unit Test Case for Food Pre-Order

| **No.** | | 7 | | **Plan Date** | | 9 August 2021 | |
|---|---|---|---|---|---|---|---|
| **Module** | | Admin/Diner Module | | **Planned By** | | Ong Jun Kit | |
| **Test Title** | | Food Pre-Order | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | | Ong Jun Kit | |
| **Pre-condition(s)** | | Diner must have at least one upcoming reservation.<br>For admin, the system must have at least one upcoming reservation record.<br>The reservation status must be either "Pending", "Completed", or "Edited". | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_PO_001 | User adds 4 dishes, and then the dishes are listed in order summary with the calculated grand total price. After user clicks "Checkout", the dishes are added successfully | 1. Click "Pre-Order"<br>2. Add 4 random dishes<br>3. Click "Checkout" button | 1 Pasta Tomato (price: 12),<br>1 Ramly Burger (price: 5),<br>2 Adisio Coffee (price: 12 / item)<br>Total 4 dishes | Order summary displays all the added dishes and total price of RM41. After checkout, a message "Food pre-order successful" is prompted. | The pre-ordered food can be viewed in food pre-ordered list. | Order summary displays all the added dishes and total price of RM41. After checkout, a message "Food pre-order successful" is prompted. | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | User adds 5 dishes and removes 2 dishes, and then the dishes are listed in order summary with the calculated grand total price. After user clicks "Checkout", the dishes are added successfully | 1. Click "Pre-Order"<br>2. Add 5 random dishes<br>3. Remove 2 random dishes<br>4. Click "Checkout" button | Add:<br>1 Pasta Tomato (price: 12),<br>2 Ramly Burger (price: 5 / item),<br>2 Adisio Coffee (price: 12 / item)<br><br>Remove:<br>1 Ramly Burger (price: 5),<br>1 Adisio Coffee (price: 12) | Order summary displays 1 Pasta Tomato, 1 Ramly Burger , and 1 Adisio Coffee and total price of RM29. After checkout, a message "Food pre-order successful" is prompted. | The pre-ordered food can be viewed in food pre-ordered list. | Order summary displays 1 Pasta Tomato, 1 Ramly Burger , and 1 Adisio Coffee and total price of RM29. After checkout, a message "Food pre-order successful" is prompted. | Pass |
| | User adds 2 dishes and removes 2 added dishes. The order summary is empty. User will checkout without any dishes. | 1. Click "Pre-Order"<br>2. Add 2 dishes<br>3. Remove 2 added dishes | Add:<br>2 Ramly Burger (price: 5 / item)<br><br>Remove:<br>2 Ramly Burger | Order summary is empty and total price is RM0. An error message "No dishes is | - | Order summary is empty and total price is RM0. An error message "No dishes is selected. Please select at | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 4. Click "Checkout" button | (price: 5) | selected. Please select at least one dish to complete pre-order" is prompted | | least one dish to complete pre-order" is prompted | |
| | User adds 2 dishes and removes the added dishes 3 times by clicking "-" button. | 1. Click "Pre-Order"<br>2. Add 2 dishes<br>3. Remove 3 added dishes | Add:<br>2 Ramly Burger (price: 5 / item)<br><br>Remove:<br>3 Ramly Burger (price: 5) | The order summary is empty. The quantity of Ramly Burger is 0 instead of -1. | - | The order summary is empty. The quantity of Ramly Burger is 0 instead of -1. | Pass |

Table 7-8: Unit Test Case for Time Restriction on Making, Cancellation and Editing Reservation

| **No.** | | 8 | | **Plan Date** | | 10 August 2021 | |
|---|---|---|---|---|---|---|---|
| **Module** | | Diner Module | | **Planned By** | | Ong Jun Kit | |
| **Test Title** | | Time Restriction on Making, Cancellation and Editing Reservation | | | | | |
| **Execution Date** | | 12 August 2021 | | **Executed By** | | Ong Jun Kit | |
| **Pre-condition(s)** | | 1. Diner must own and login an account.<br>2. The reservation status must be either "Pending", "Confirmed", or "Edited" for cancelling and editing reservation. | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_TRR_001 | At 1359, diner can make a reservation and selects reservation time 1600 on the same day. | 1. Select reservation date and time.<br>2. Fill in other information<br>3. Click "Submit Reservation" button | Current date and time:<br>13:59, 12 August 2021<br>Reservation date and time selected:<br>16:00, 12 August 2021<br>Other valid information | Reservation is successfully made. A message of "Reservation made successfully" is prompted. | System will prompt a confirmation message asking if user wants to pre-order food for reservation. | Reservation is successfully made. A message of "Reservation made successfully" is prompted. | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | At 1400, diner cannot make a reservation and selects reservation time 1600 on the same day. | 1. Select reservation date and time.<br>2. Fill in other information<br>3. Click "Submit Reservation" button | Current date and time:<br>14:00, 12 August 2021<br>Reservation date and time selected:<br>16:00, 12 August 2021<br>Other valid information | Fail to make reservation. An error message of "Please make reservation 2 hours later than current time" is prompted. | - | Fail to make reservation. An error message of "Please make reservation 2 hours later than current time" is prompted. | Pass |
| | At 1359, diner can cancel a reservation with reservation time 1600 on the same day. | 1. View reservation list<br>2. Click "Cancel" button. | Current date and time:<br>13:59, 12 August 2021<br>Reservation date and time:<br>16:00, 12 August 2021 | A message "Cancellation successful" is prompted.<br>Reservation status is updated to "Cancelled". | Diner can no longer perform any action on cancelled reservation. | A message "Cancellation successful" is prompted.<br>Reservation status is updated to "Cancelled". | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | At 1400, diner cannot cancel a reservation with reservation time 1600 on the same day. | 1. View reservation list<br>2. Click "Cancel" button. | Current date and time:<br>14:00, 12 August 2021<br>Reservation date and time:<br>16:00, 12 August 2021 | "Cancel" button is disabled. Therefore, the reservation cannot be cancelled. | - | "Cancel" button is disabled. Therefore, the reservation cannot be cancelled. | Pass |
| | At 1359, diner can modify a reservation with reservation time 1600 on the same day. | 1. View reservation list<br>2. Click "Edit" button. | Current date and time:<br>13:59, 12 August 2021<br>Reservation date and time:<br>16:00, 12 August 2021 | "Edit Reservation" modal is shown for diner to perform editing. | - | "Edit Reservation" modal is shown for diner to perform editing. | Pass |
| | At 1400, diner cannot modify a reservation with | 1. View reservation list | Current date and time: | "Edit" button is disabled. Therefore, the | - | "Edit" button is disabled. Therefore, the | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | reservation time 1600 on the same day. | 2. Click "Edit" button. | 14:00, 12 August 2021<br>Reservation date and time:<br>16:00, 12 August 2021 | reservation cannot be edited. | | reservation cannot be edited. | |

Table 7-9: Unit Test Case for Time Restriction on Editing Pre-Ordered Food List (Diner Module)

| **No.** | | 9 | | **Plan Date** | | 9 August 2021 | |
|---|---|---|---|---|---|---|---|
| **Module** | | Diner Module | | **Planned By** | | Ong Jun Kit | |
| **Test Title** | | Time Restriction on Editing Pre-Ordered Food List | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | | Ong Jun Kit | |
| **Pre-condition(s)** | | 1. The selected reservation must have at least one pre-ordered food.<br>2. The reservation status must be either "Pending", "Confirmed", or "Edited". | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_TREPO_001 | At 1359, diner can modify a pre-ordered food list in selected reservation with | 1. Navigate to "Food Pre-Order" | Current date and time:<br>13:59, 12 August 2021 | Successfully navigate to a screen where diner can edit | | Successfully navigate to a screen where diner can edit | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | reservation time 1600 on the same day. | 2. Click “Edit” button | Reservation date and time: 16:00, 12 August 2021 | the pre-ordered food list. | | the pre-ordered food list. | |
| | At 1400, diner cannot modify a pre-ordered food list in selected reservation with reservation time 1600 on the same day. | 1. Navigate to “Food Pre-Order” 2. Click “Edit” button | Current date and time: 14:00, 12 August 2021 Reservation date and time: 16:00, 12 August 2021 | “Edit” button is disabled, and therefore failed to edit pre-ordered food list. | - | “Edit” button is disabled, and therefore failed to edit pre-ordered food list. | Pass |

Table 7-10: Unit Test Case for Modification on Pre-ordered Food List (Diner/Admin Module)

| **No.** | | 10 | | **Plan Date** | | 9 August 2021 | |
|---|---|---|---|---|---|---|---|
| **Module** | | Diner/Admin Module | | **Planned By** | | Ong Jun Kit | |
| **Test Title** | | Modification on Pre-ordered Food List | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | | Ong Jun Kit | |
| **Pre-condition(s)** | | 1. User with diner role must perform modification on pre-ordered food list 2 hours in advance of reservation date and time<br>2. The reservation must have at least one pre-ordered food.<br>3. The reservation status must be either "Pending", "Confirmed", or "Edited". | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_MPO_001 | User attempts to edit the pre-ordered food list in a selected reservation but the selected reservation does not have any pre-ordered food. | 1. Navigate to "Food Pre-Order"<br>2. Click "Edit" | A reservation without pre-ordered food record. | A message "Pre-Order Food list in this reservation is empty" is prompted. | "Pre-Order Food Now!" button is shown for user to pre-order food. | A message "Pre-Order Food list in this reservation is empty" is prompted. | Pass |
| | User attempts to edit the pre-ordered food list in a selected | 1. Navigate to "Food Pre-Order" | A reservation that already have at least one Past | A message "Dish ID (dish ID) is added | - | A message "Dish ID (dish ID) is added | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | reservation by adding 2 Pasta Tomato that already existed in the pre-ordered food list. | 2. Click “Edit”<br>3. Click “Add” 2 times to add 2 Pasta Tomato.<br>4. Click “Ok”. | Tomato pre-ordered.<br>Add 2 Pasta Tomato. | successfully” is prompted. The quantity of Pasta Tomato is added by 2. | | successfully” is prompted. The quantity of Pasta Tomato is added by 2. | |
| | User attempts to edit the pre-ordered food list in a selected reservation by removing 2 Pasta Tomato that already existed in the pre-ordered food list. | 1. Navigate to “Food Pre-Order”<br>2. Click “Edit”<br>3. Click “Remove” 2 times to remove 2 Pasta Tomato.<br>4. Click “Ok” | A reservation that already have at least one Past Tomato pre-ordered.<br>Remove 2 Pasta Tomato. | A message “Dish ID (dish ID) is removed successfully” is prompted. The quantity of Pasta Tomato is reduced by 2. | - | A message “Dish ID (dish ID) is removed successfully” is prompted. The quantity of Pasta Tomato is reduced by 2. | Pass |
| | User attempts to edit the pre-ordered food list in a selected | 1. Navigate to “Food Pre-Order” | A reservation that does not have | A message “Dishes are added | - | A message “Dishes are added | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | reservation by adding new 2 Laksa Johor. | 2. Click “Edit”<br>3. Click “Add New Dish”<br>4. Add 2 Laksa Johor<br>5. Click “Add New Dishes” | Laksa Johor record.<br><br>2 Laksa Johor | successfully” is prompted. The Laksa Johor with quantity of 2 is added and can be viewed in pre-ordered food list. | | successfully” is prompted. The Laksa Johor with quantity of 2 is added and can be viewed in pre-ordered food list. | |

Table 7-11: Unit Test Case for View Reservation List (Diner/Admin Module)

| **No.** | | 11 | | **Plan Date** | 9 August 2021 | | |
|---|---|---|---|---|---|---|---|
| **Module** | | Diner/Admin Module | | **Planned By** | Ong Jun Kit | | |
| **Test Title** | | View Reservation List | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | Ong Jun Kit | | |
| **Pre-condition(s)** | | 1. Diner and admin must own and login account. | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_VIEWR_001 | Diner navigates to "View Reservations" to view the reservation list. | 1. Login diner account<br>2. Click "View Reservations" | Diner's user ID and role ID | A list of reservation that belongs to the user is displayed. | - | A list of reservation that belongs to the user is displayed. | Pass |
| | Admin navigates to "View Reservations" to view the all the user's reservation list. | 1. Login admin account<br>2. Click "View Reservations" | Admin's role ID | All the diners' reservations record is displayed. | - | All the diners' reservations record is displayed. | Pass |

Table 7-12: Unit Test Case for View Restaurant Menu (Diner/Admin Module)

| **No.** | | 12 | | **Plan Date** | | 9 August 2021 | |
|---|---|---|---|---|---|---|---|
| **Module** | | Diner/Admin Module | | **Planned By** | | Ong Jun Kit | |
| **Test Title** | | View Restaurant Menu | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | | Ong Jun Kit | |
| **Pre-condition(s)** | | - | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_VRM_001 | User navigate to restaurant menu by clicking "View Restaurant Menu" tab. | 1. Click "View Restaurant Menu" | - | The system will retrieve all dishes with "Active" equal to 1, and displays to user. | - | The system will retrieve all dishes with "Active" equal to 1, and displays to user. | Pass |
| | User clicks dish category to view dishes which are categorized into | 1. Click "View Restaurant Menu"<br>2. Click "Salads" | Dish category "Salads" | All dishes categorized into "Salads" are displayed. | - | All dishes categorized into "Salads" are displayed. | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | selected dish category. | | | | | | |
| | User moves their cursor over the dish photo to view dish's information. | 1. Click "View Restaurant Menu"<br>2. Move cursor over the dish photo. | - | The dish's information will be displayed on the dish photo. | - | The dish's information will be displayed on the dish photo. | Pass |

Table 7-13: Unit Test Case for View Pre-Ordered Food List (Diner/Admin Module)

| **No.** | | 13 | | **Plan Date** | 9 August 2021 | | |
|---|---|---|---|---|---|---|---|
| **Module** | | Diner/Admin Module | | **Planned By** | Ong Jun Kit | | |
| **Test Title** | | View Pre-Ordered Food List | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | Ong Jun Kit | | |
| **Pre-condition(s)** | | 1. Diner and admin must own and login an account.<br>2. Diner must have at least one upcoming reservation<br>3. System must have at least one reservation record. | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_VIEW PO_001 | User views the pre-ordered food list, by selecting an upcoming reservation but the selected reservation does not have any pre-ordered food. | 1. Navigate to "Food Pre-Order"<br>2. Click "View" button | A reservation that does not have pre-any ordered food record. | A message "Pre-Order Food list in this reservation is empty" is prompted. | "Pre-Order Food Now!" button is shown for user to pre-order food. | A message "Pre-Order Food list in this reservation is empty" is prompted. | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | User views the pre-ordered food list, by selecting an upcoming reservation that contains at least one pre-ordered food. | 1. Navigate to "Food Pre-Order"<br>2. Click "View" button | A reservation that has at least one pre-ordered food. | A list of pre-ordered food is displayed. | - | A list of pre-ordered food is displayed. | Pass |

Table 7-14: Unit Test Case for Admin Confirm/Reject Reservation in Different Status

| **No.** | | 14 | | **Plan Date** | 9 August 2021 | | |
|---|---|---|---|---|---|---|---|
| **Module** | | Admin Module | | **Planned By** | Ong Jun Kit | | |
| **Test Title** | | Confirm/Reject Reservation in Different Status | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | Ong Jun Kit | | |
| **Pre-condition(s)** | | 1. The system must have at least one new upcoming reservation made by diner.<br>2. The upcoming reservation status must be either "Pending" or "Edited". | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_CRRS_001 | Admin confirms an upcoming (Pending) reservation by clicking "Confirm" button. | 1. Navigate to "View Reservation"<br>2. Click "Confirm" button | - | A message of "You have confirmed reservation (ID)" is prompted. | - | A message of "You have confirmed reservation (ID)" is prompted. | Pass |
| | Admin rejects an upcoming (Pending) reservation by clicking "Reject" button. | 1. Navigate to "View Reservation"<br>2.Click "Reject" button | - | A message of "You have rejected reservation (ID)" is prompted. | - | A message of "You have rejected reservation | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | (ID)" is prompted | |
| | Admin confirms an upcoming (Edited) reservation by clicking "Confirm" button. | 1. Navigate to "View Reservation" 2. Click "Confirm" button | - | A message of "You have confirmed reservation (ID)" is prompted. | - | A message of "You have confirmed reservation (ID)" is prompted. | Pass |
| | Admin rejects an upcoming (Edited) reservation by clicking "Reject" button. | 1. Navigate to "View Reservation" 2.Click "Reject" button | - | A message of "You have rejected reservation (ID)" is prompted. | - | A message of "You have rejected reservation (ID)" is prompted | Pass |
| | Admin attempts to confirm an upcoming (Confirmed) reservation by | 1. Navigate to "View Reservation" 2. Click "Confirm" button | - | "Confirm" button is disabled. The action cannot be performed. | - | "Confirm" button is disabled. The action cannot be performed. ( | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | clicking “Confirm” button. | | | | | | |
| | Admin attempts to reject an upcoming (Confirmed) reservation by clicking “Reject” button. | 1. Navigate to “View Reservation” 2.Click “Reject” button | - | “Reject” button is disabled. The action cannot be performed. | - | “Reject” button is disabled. The action cannot be performed. | Pass |
| | Admin attempts to confirm an upcoming (Rejected) reservation by clicking “Confirm” button. | 1. Navigate to “View Reservation” 2. Click “Confirm” button | - | “Confirm” button is disabled. The action cannot be performed. | - | “Confirm” button is disabled. The action cannot be performed. ( | Pass |
| | Admin attempts to reject an upcoming (Rejected) reservation by clicking “Reject” button. | 1. Navigate to “View Reservation” 2.Click “Reject” button | - | “Reject” button is disabled. The action cannot be performed. | - | “Reject” button is disabled. The action cannot be performed. | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Admin attempts to confirm an upcoming (Cancelled) reservation by clicking “Confirm” button. | 1. Navigate to “View Reservation”<br>2. Click “Confirm” button | - | “Confirm” button is disabled. The action cannot be performed. | - | “Confirm” button is disabled. The action cannot be performed. ( | Pass |
| | Admin attempts to reject an upcoming (Cancelled) reservation by clicking “Reject” button. | 1. Navigate to “View Reservation”<br>2.Click “Reject” button | - | “Reject” button is disabled. The action cannot be performed. | - | “Reject” button is disabled. The action cannot be performed. | Pass |

Table 7-15: Unit Test Case for Sending Email Notification After Confirm/Reject Reservation

| **No.** | | 15 | | **Plan Date** | | 9 August 2021 | |
|---|---|---|---|---|---|---|---|
| **Module** | | Admin Module | | **Planned By** | | Ong Jun Kit | |
| **Test Title** | | Send Email Notification After Confirm/Reject Reservation | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | | Ong Jun Kit | |
| **Pre-condition(s)** | | 1. The system must have at least one new upcoming reservation made by diner.<br>2. The upcoming reservation status must be either "Pending" or "Edited". | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_MAIL_001 | Admin confirms an upcoming reservation. An email notification will be sent, and then the status is updated to "Confirmed" | 1. Navigate to "View Reservation"<br>2. Click "Confirm" button | - | A message "An email has been sent" is prompted. The reservation status is updated to "Confirmed". | - | A message "An email has been sent" is prompted. The reservation status is updated to "Confirmed". | Pass |
| | Admin rejects an upcoming reservation. An email notification will be sent, and then the status is updated to "Rejected" | 1. Navigate to "View Reservation"<br>2.Click "Reject" button | - | A message "An email has been sent" is prompted. The reservation status is updated to "Rejected". | - | A message "An email has been sent" is prompted. The reservation status is updated to "Rejected". | Pass |

Table 7-16: Unit Test Case for Add New Dish in Restaurant Menu Management

| **No.** | | 16 | | **Plan Date** | 9 August 2021 | | |
|---|---|---|---|---|---|---|---|
| **Module** | | Admin Module | | **Planned By** | Ong Jun Kit | | |
| **Test Title** | | Add New Dish in Restaurant Menu Management | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | Ong Jun Kit | | |
| **Pre-condition(s)** | | - | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_ADDND_001 | Admin attempts to add new dish. Admin enters dish name and its price without entering dish description and uploading dish photo, which both are optional. | 1. Navigate to "Manage Restaurant Menu"<br>2. Click "Add New Dish"<br>3. Fill in dish name and valid price<br>4. Click "Create New Dish" | 1. Dish name<br>2. Valid dish price | A message "New dish is added successfully" is prompted. The new dish can be viewed in restaurant menu. | A photo of new dish will be a default image (default.png) if no photo is upload. New dish will automatically become active. | A message "New dish is added successfully" is prompted. The new dish can be viewed in restaurant menu. | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Admin attempts to add new dish. Admin enters dish name and invalid dish price without entering dish description and uploading dish photo, which both are optional. | 1. Navigate to "Manage Restaurant Menu"<br>2. Click "Add New Dish"<br>3. Fill in dish name and invalid price<br>4. Click "Create New Dish" | 1. Dish name<br>2. Invalid dish price (with alphabetic character A-z) | An error message "Price must be numeric!" is prompted. | - | An error message "Price must be numeric!" is prompted. | Pass |
| | Admin attempts to add new dish. Admin enters dish name but leaves dish price blank. | 1. Navigate to "Manage Restaurant Menu"<br>2. Click "Add New Dish"<br>3. Fill in dish name<br>4. Click "Create New Dish" | 1. Dish name | An input field for dish price is highlighted, and a message "Please fill in this field" is prompted. | - | An input field for dish price is highlighted, and a message "Please fill in this field" is prompted. | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Admin attempts to add new dish. Admin enters dish price only but leaves dish name blank. | 1. Navigate to "Manage Restaurant Menu" 2. Click "Add New Dish" 3. Fill in dish price 4. Click "Create New Dish" | 1. Dish price | An input field for dish name is highlighted, and a message "Please fill in this field" is prompted. | - | An input field for dish name is highlighted, and a message "Please fill in this field" is prompted. | Pass |

Table 7-17: Unit Test Case for Upload/Change Dish Photo in Restaurant Menu Management

| **No.** | | 17 | | **Plan Date** | | 9 August 2021 | |
|---|---|---|---|---|---|---|---|
| **Module** | | Admin Module | | **Planned By** | | Ong Jun Kit | |
| **Test Title** | | Upload/Change Dish Photo in Restaurant Menu Management | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | | Ong Jun Kit | |
| **Pre-condition(s)** | | - | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_UCDP_001 | Admin attempts to select other file type besides image file for dish photo when adding new dish or changing dish photo. | 1. Click “Choose file”<br>2. Choose other file type besides image file | Random .docx file | An error message “Error! File type must be .jpg, .png, .jpeg or .gif” is prompted. | - | An error message “Error! File type must be .jpg, .png, .jpeg or .gif” is prompted. | Pass |
| | Admin does not choose image file and click “Change Photo” when changing dish photo. | 1. Click “Change Photo”<br>2. Click “Change Photo” directly with choosing image file. | - | An error message “Error! Please choose an image file to upload for | - | An error message “Error! Please choose an image file to upload for | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | dish ID" is prompted | | dish ID" is prompted | |
| | Admin attempts to select an image file with file size larger than 2MB for dish photo when adding new dish or changing dish photo | 1. Click "Choose file"<br>2. Choose image file with file size larger than 2MB | 2160kb Image file | An error message "Error! Image file cannot be larger than 2MB" is prompted | - | An error message "Error! Image file cannot be larger than 2MB" is prompted | Pass |
| | Admin select a valid image file with file size smaller than 2MB for new dish. | 1. Click "Add New Dish"<br>2. Fill in the required information<br>3. Choose image file<br>4. Click "Create New Dish" | 1. Valid dish name and price<br>2. 1793kb valid image file | A message "New dish is added successfully". The new dish's photo can be viewed in restaurant menu. | - | A message "New dish is added successfully". The new dish's photo can be viewed in restaurant menu. | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Admin select a valid image file with file size smaller than 2MB when changing dish photo. | 1. Click “Change Photo”<br>2. Choose image file<br>3. Click “Change Photo” | 1. 1793kb valid image file | A message “Dish photo (ID) is changed successfully” is prompted. The dish photo is changed. | - | A message “Dish photo (ID) is changed successfully” is prompted. The dish photo is changed. | Pass |

Table 7-18: Unit Test Case for Edit Dish Details in Restaurant Menu Management

| **No.** | | 18 | | **Plan Date** | | 9 August 2021 | |
|---|---|---|---|---|---|---|---|
| **Module** | | Admin Module | | **Planned By** | | Ong Jun Kit | |
| **Test Title** | | Edit Dish Details in Restaurant Menu Management | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | | Ong Jun Kit | |
| **Pre-condition(s)** | | 1. The system must have at least one dish record. | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_EDD_001 | Admin changes the dish name from “Pasta Tomato” to “Pasta Mushroom”. | 1. Click “Edit” on dish “Pasta Tomato”<br>2. Modify dish name | 1. dish name “Pasta Mushroom” | A message “Dish (ID) is updated successfully” is prompted. The dish | - | A message “Dish (ID) is updated successfully” is prompted. The | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 3. Click “Update Dish” | | name is changed to “Pasta Mushroom” | | dish name is changed to “Pasta Mushroom” | |
| | Admin changes (Pasta Mushroom) dish description to “Fresh Mushroom Sauce”. | 1. Click “Edit” on dish “Pasta Mushroom”<br>2. Modify dish description<br>3. Click “Update Dish” | 1. dish description “Fresh Mushroom Sauce” | A message “Dish (ID) is updated successfully” is prompted. The dish description is changed to “Pasta Mushroom” | - | A message “Dish (ID) is updated successfully” is prompted. The dish description is changed to “Pasta Mushroom” | Pass |
| | Admin changes Pasta Mushroom’s dish price to RM15. | 1. Click “Edit” on dish “Pasta Mushroom”<br>2. Modify dish price<br>3. Click “Update Dish” | 1. valid dish price 15 (without letters A-z) | A message “Dish (ID) is updated successfully” is prompted. The dish price is changed to 15. | - | A message “Dish (ID) is updated successfully” is prompted. The dish price is changed to 15. | Pass |
| | Admin changes Pasta Mushroom’s | 1. Click “Edit” on dish “Pasta Mushroom” | 1. dish category “Pasta” | A message “Dish (ID) is updated successfully” is | - | A message “Dish (ID) is updated successfully” is | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | dish category to “Pasta”. | 2. Modify dish category<br>3. Click “Update Dish” | | prompted. The dish category is changed to “Pasta”. | | prompted. The dish category is changed to “Pasta”. | |
| | Admin leaves the dish name or price empty, which both are required to be filled in when updating dish. | 1. Click “Edit” on dish “Pasta Mushroom”<br>2. Leave either dish name or price empty<br>3. Click “Update Dish” | - | The blank input field is highlighted. A message “Please fill in this field” is prompted. Dish cannot be updated. | - | The blank input field is highlighted. A message “Please fill in this field” is prompted. Dish cannot be updated. | Pass |
| | Admin enter invalid dish price when updating dish price. | 1. Click “Edit”<br>2. Enter invalid price<br>3. Click “Update Dish” | Invalid dish price (with letters A-z) | An error message “Error! Fail to update dish (ID)” is prompted. Dish price fails to be updated. | - | An error message “Error! Fail to update dish (ID)” is prompted. Dish price fails to be updated. | Pass |

Table 7-19: Unit Test Case for Activate/Inactivate Dish in Restaurant Menu Management

| **No.** | | 19 | | **Plan Date** | | 9 August 2021 | |
|---|---|---|---|---|---|---|---|
| **Module** | | Admin Module | | **Planned By** | | Ong Jun Kit | |
| **Test Title** | | Activate/Inactivate Dish in Restaurant Menu Management | | | | | |
| **Execution Date** | | 11 August 2021 | | **Executed By** | | Ong Jun Kit | |
| **Pre-condition(s)** | | 1. The system must have at least one dish record. | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_ACT_001 | Admin activates the inactive dish. | 1. Navigate to "Restaurant Menu Management"<br>2. Click "Activate" on inactive dish | - | A message "Dish (ID) is activated" is prompted. The inactive dish is now active. | The dish will be visible in restaurant menu. | A message "Dish (ID) is activated" is prompted. The inactive dish is now active. | Pass |
| | Admin de-activates the active dish. | 1. Navigate to "Restaurant Menu Management"<br>2. Click "Deactivate" on active dish | - | A message "Dish (ID) is de-activated" is prompted. The active dish is now inactive. | The dish will not be visible in restaurant menu. | A message "Dish (ID) is de-activated" is prompted. The active dish is now inactive. | Pass |

Table 7-20: Unit Test Case for Add/Remove Dish Category in Restaurant Menu Management

| **No.** | | 20 | | **Plan Date** | | 10 August 2021 | |
|---|---|---|---|---|---|---|---|
| **Module** | | Admin Module | | **Planned By** | | Ong Jun Kit | |
| **Test Title** | | Add/Remove Dish Category in Restaurant Menu Management | | | | | |
| **Execution Date** | | 12 August 2021 | | **Executed By** | | Ong Jun Kit | |
| **Pre-condition(s)** | | 1. The system must have at least one dish's category record before remove it. | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_DCAT_001 | Admin adds new dish category called "Salad". | 1. Click "Add Dish Category"<br>2. Enter dish category "Salad"<br>3. Click "Create New Category" | Dish category "Salad" | A message "New Dish Category is added successfully" is prompted. A new dish category "Salad" is added. | - | A message "New Dish Category is added successfully" is prompted. A new dish category "Salad" is added. | Pass |
| | Admin removes dish category called "Salad". | 1. Click "Remove Dish Category"<br>2. Select dish category "Salad"<br>3. Click "Remove Category" | Dish category "Salad" | A message "Dish Category is removed successfully" is prompted. The dish category "Salad" is removed. | Dishes in category "Salad" will be automatically updated to "Others" | A message "New Dish Category is added successfully" is prompted. The dish category "Salad" is removed. | Pass |

Table 7-21:Unit Test Case for Data Retrieval for Report

| **No.** | | 21 | | **Plan Date** | | 10 August 2021 | |
|---|---|---|---|---|---|---|---|
| **Module** | | Admin Module | | **Planned By** | | Ong Jun Kit | |
| **Test Title** | | Data Retrieval for Report | | | | | |
| **Execution Date** | | 12 August 2021 | | **Executed By** | | Ong Jun Kit | |
| **Pre-condition(s)** | | Only account with admin is authorized to view report. | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_DRRPT_001 | Admin views the "Table Booking Frequency" report by selecting a valid date range and "Top 10 Customers" report type. | 1. Select "Table Booking Frequency" report<br>2. Select valid date range<br>3. Select report type<br>4. Click "View Report" | 1.Report type "Top 10 Customers"<br>2. Valid date range:<br>from date: 1/1/2021<br>to date: 31/12/2021 | Report is generated successfully. Top ten customers with their number of reservations made from 1/1/2021 31/12/2021 is displayed in report. | | Report is generated successfully. Top ten customers with their number of reservations made from 1/1/2021 31/12/2021 is displayed in report. | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Admin views the "Table Booking Frequency" report by selecting a valid date range and "All Customers" report type. | 1. Select "Table Booking Frequency" report<br>2. Select valid date range<br>3. Select report type<br>4. Click "View Report" | 1.Report type "All Customers"<br>2. Valid date range:<br>from date: 1/5/2021<br>to date: 31/8/2021 | Report is generated successfully. All customers with their number of reservations made from 1/5/2021 31/8/2021 is displayed in report. | | Report is generated successfully. All customers with their number of reservations made from 1/5/2021 31/8/2021 is displayed in report. | Pass |
| | Admin views the "Most Popular Dish" report by selecting a "Top 10 Dish" report type. | 1. Select "Most Popular Dish" report<br>2. Select report type<br>3. Click "View Report" | 1.Report type "Top 10 Dish" | Report is generated successfully. Top ten dishes with their number of pre-ordered by customers is displayed in report. | | Report is generated successfully. Top ten dishes with their number of pre-ordered by customers is displayed in report | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Admin views the "Most Popular Dish" report by selecting a "All Dish" report type. | 1. Select "Most Popular Dish" report<br>2. Select report type<br>3. Click "View Report" | 1.Report type "All Dish" | Report is generated successfully. All dishes with their number of pre-ordered by customers is displayed in report. | | Report is generated successfully. All dishes with their number of pre-ordered by customers is displayed in report. | Pass |
| | Admin views the "Most Popular Dish" report by selecting a "By Dish Category" report type. | 1. Select "Most Popular Dish" report<br>2. Select report type<br>3. Click "View Report" | 1.Report type "By Dish Category" | Report is generated successfully. All dishes with their number of pre-ordered by customers is categorized and displayed in report. | | Report is generated successfully. All dishes with their number of pre-ordered by customers is categorized and displayed in report. | Pass |

Table 7-22: Unit Test Case for View Reports

| **No.** | | 22 | | **Plan Date** | | 10 August 2021 | |
|---|---|---|---|---|---|---|---|
| **Module** | | Admin Module | | **Planned By** | | Ong Jun Kit | |
| **Test Title** | | View Reports | | | | | |
| **Execution Date** | | 12 August 2021 | | **Executed By** | | Ong Jun Kit | |
| **Pre-condition(s)** | | Only account with admin is authorized to view report. | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_VRPT_001 | Admin views the "Table Booking Frequency" report by selecting a valid date range and "Top 10 Customers" report type. | 1. Select "Table Booking Frequency" report<br>2. Select valid date range<br>3. Select report type<br>4. Click "View Report" | 1.Report type "Top 10 Customers"<br>2. Valid date range:<br>from date: 1/1/2021<br>to date: 31/12/2021 | "(Top 10 Customers) Table Booking Frequency From 1/1/2021 To 31/12/2021" is generated successfully. | - | "(Top 10 Customers) Table Booking Frequency From 1/1/2021 To 31/12/2021" is generated successfully. | Pass |
| | Admin views the "Table Booking Frequency" report | 1. Select "Table Booking Frequency" report | 1.Report type "All Customers" | "Table Booking Frequency From 1/1/2021 To | - | "Table Booking Frequency From 1/1/2021 To | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | by selecting a valid date range and "All Customers" report type. | 2. Select valid date range<br>3. Select report type<br>4. Click "View Report" | 2. Valid date range:<br>from date: 1/1/2021<br>to date: 31/12/2021 | 31/12/2021" is generated successfully. | | 31/12/2021" is generated successfully. | |
| | Admin views the "Table Booking Frequency" report by selecting an invalid date range and any report type. | 1. Select "Table Booking Frequency" report<br>2. Select invalid date range<br>3. Select report type<br>4. Click "View Report" | 1.Report type "All Customers"<br>2. Invalid date range:<br>from date: 31/12/2021<br>to date: 1/1/2021 | An error message "Invalid date selected! "From date" must be earlier (smaller) than "Until" date" is prompted. Report is failed to be generated. | - | An error message "Invalid date selected! "From date" must be earlier (smaller) than "Until" date" is prompted. Report is failed to be generated. | Pass |
| | Admin views the "Most Popular Dish" report and | 1. Select "Most Popular Dish" report | 1. Report type "Top 10 Dish" | "Top 10 Most Popular Dish" report is | - | "Top 10 Most Popular Dish" report is | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | select “Top 10 Dish” report type. | 2. Select report type<br>3. Click “View Report” | | successfully generated. | | successfully generated. | |
| | Admin views the “Most Popular Dish” report and select “All Dish” report type. | 1. Select “Most Popular Dish” report<br>2. Select report type<br>3. Click “View Report” | 1. Report type “All Dish” | “Most Popular Dish” report is successfully generated. | - | “Most Popular Dish” report is successfully generated. | Pass |
| | Admin views the “Most Popular Dish” report and select “By Dish Category” report type. | 1. Select “By Dish Category” report<br>2. Select report type<br>3. Click “View Report” | 1. Report type “By Dish Category” | “Most Popular Dish By Dish Category” report is successfully generated. | - | “Most Popular Dish By Dish Category” report is successfully generated. | Pass |

Table 7-23: Unit Test Case for Exporting Reservation

| **No.** | | 23 | | **Plan Date** | | 12 August 2021 | |
|---|---|---|---|---|---|---|---|
| **Module** | | Admin Module | | **Planned By** | | Ong Jun Kit | |
| **Test Title** | | Exporting Reservation | | | | | |
| **Execution Date** | | 13 August 2021 | | **Executed By** | | Ong Jun Kit | |
| **Pre-condition(s)** | | Only account with admin account is authorized to perform exporting. | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_EXP_001 | Admin exports all reservation into Excel file. | 1. Navigate to "View Reservation"<br>2. Click "Print/Export Reservation List"<br>3. Select "Reservation" and excel file type<br>4. Click "Export | - | All the reservation is exported into Excel file and is downloaded successfully. | - | All the reservation is exported into Excel file and is downloaded successfully. | Pass |
| | Admin exports all confirmed reservation into PDF file. | 1. Navigate to "View Reservation"<br>2. Click "Print/Export Reservation List" | - | All the reservation is exported and | - | All the reservation is exported and | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 3. Select “Reservation” and pdf file type<br>4. Click “Export | | downloaded as PDF file. | | downloaded as PDF file. | |
| | Admin exports all upcoming reservation into Excel file. | 1. Navigate to “View Reservation”<br>2. Click “Print/Export Reservation List”<br>3. Select “Reservation” and excel file type<br>4. Click “Export | - | All the upcoming reservation is exported into Excel file and is downloaded successfully. | - | All the upcoming reservation is exported into Excel file and is downloaded successfully. | Pass |
| | Admin exports all upcoming confirmed reservation into PDF file. | 1. Navigate to “View Reservation”<br>2. Click “Print/Export Reservation List”<br>3. Select “Reservation” and pdf file type<br>4. Click “Export | - | All the upcoming reservation is exported and downloaded as PDF file. | - | All the upcoming reservation is exported and downloaded as PDF file. | Pass |

Table 7-24: Unit Test Case for Exporting Report

| **No.** | | 24 | | **Plan Date** | | 12 August 2021 | |
|---|---|---|---|---|---|---|---|
| **Module** | | Admin Module | | **Planned By** | | Ong Jun Kit | |
| **Test Title** | | Exporting Report | | | | | |
| **Execution Date** | | 13 August 2021 | | **Executed By** | | Ong Jun Kit | |
| **Pre-condition(s)** | | Only account with admin account is authorized to perform exporting. | | | | | |
| **Test Case ID** | **Test Scenario** | **Steps** | **Data** | **Expected Result** | **Post Condition** | **Actual Result** | **Pass/Fail** |
| TC_EXP_001 | Admin exports "Table Booking Frequency" report into Excel file. | 1. Select report<br>2. Select valid date range and report type<br>3. Click "View Report"<br>4. Click "Export to Excel File" | - | "Table Booking Frequency" report is exported and downloaded into Excel file. | - | "Table Booking Frequency" report is exported and downloaded into Excel file. | Pass |
| | Admin exports "Table Booking Frequency" | 1. Select report<br>2. Select valid date range and report type | - | "Table Booking Frequency" report is exported into PDF file. | - | "Table Booking Frequency" report is exported into PDF file. | Pass |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | report into PDF file. | 3. Click “View Report”<br>4. Click “Export to PDF File” | | | | | |
| | Admin exports “Most Popular Dish” report into Excel file. | 1. Select report<br>2. Select valid date range and report type<br>3. Click “View Report”<br>4. Click “Export to Excel File” | - | “Most Popular Dish” report is exported and downloaded into Excel file. | - | “Most Popular Dish” report is exported and downloaded into Excel file. | Pass |
| | Admin exports “Most Popular Dish” report into PDF file. | 1. Select report<br>2. Select valid date range and report type<br>3. Click “View Report”<br>4. Click “Export to PDF File” | - | “Most Popular Dish” report is exported into PDF file. | - | “Most Popular Dish” report is exported into PDF file. | Pass |

## 7.4 Browser Compatibility Testing

### 7.4.1 Browser Compatibility Test Cases and Results

Table 7-25: Browser Compatibility Test Cases and Results

| | **Window 10** | | | **macOS Mojave** | **Window 8.1** |
|---|---|---|---|---|---|
| **Browser** | Chrome | Firefox | Edge | Safari | Internet Explorer |
| **Test Cases** | **Pass/Fail** | **Pass/Fail** | **Pass/Fail** | **Pass/Fail** | **Pass/Fail** |
| Contents | | | | | |
| Images, fonts display properly. | Pass | Pass | Pass | Pass | Fail |
| Layout consistency (button, modal, etc.) | Pass | Pass | Pass | Pass | Fail |
| Layout responsiveness | Pass | Pass | Pass | Pass | Fail |
| Functionalities (Main Features) | | | | | |
| Table Booking | Pass | Pass | Pass | Pass | Pass |
| Reservation Management | Pass | Pass | Pass | Pass | Fail |
| Restaurant Menu Management | Pass | Pass | Pass | Pass | Fail |
| Send Reservation Status Email Notification | Pass | Pass | Pass | Pass | Pass |
| Exporting Report Feature | Pass | Pass | Pass | Pass | Pass |
| Reporting Feature | Pass | Pass | Pass | Pass | Pass |
| Food Pre-order | Pass | Pass | Pass | Pass | Pass |
| User Privacy Protection (Sign in, Logout, etc.) | Pass | Pass | Pass | Pass | Pass |

### 7.4.2 Browser Compatibility Results Analysis

As shown in table 7-25, the system is able to run and function on every selected web browser except for Internet Explorer.

One of the reasons is because some of the modal is not shown when the button is clicked, and therefore the functionalities such as editing reservation and dish in restaurant menu cannot be performed. Furthermore, another reason is because the image size does not display the size as coded in CSS file, therefore the image in restaurant management is covered the whole web page in Internet Explorer browser as shown in figure 7-1 below. In result, the restaurant management such as activate or deactivate dish, edit dish detail, and change dish photo cannot be performed.

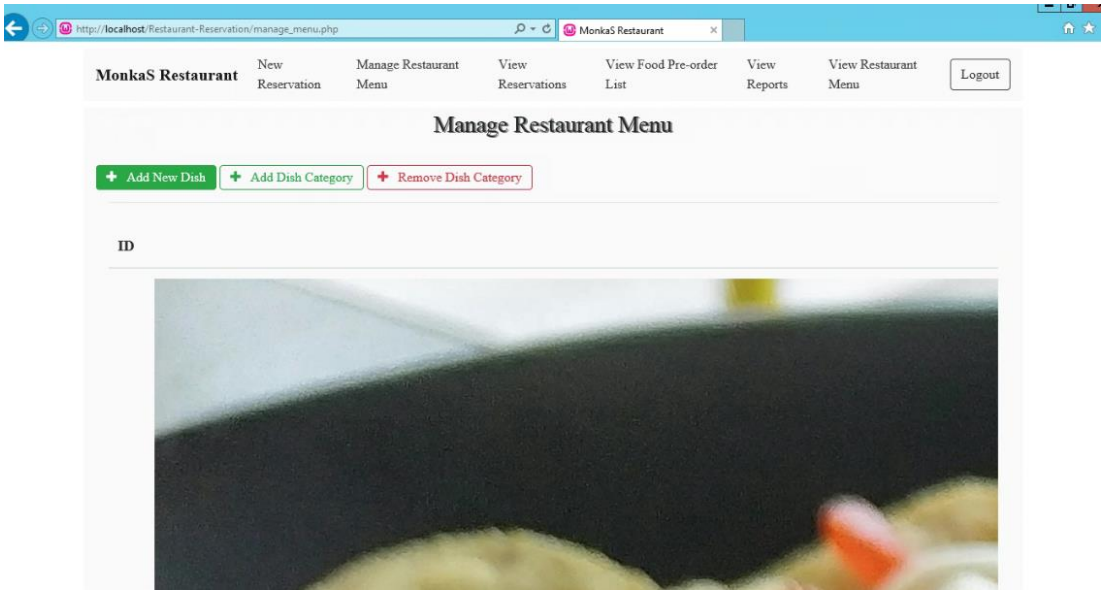



Figure 7-1: Image Display in Restaurant Menu Management with Internet Explorer Browser

## 7.5 Integration Testing

### 7.5.1 Integration Test Case and Results

Table 7-26: Diner Module Integration Test Case and Results

| Test Case Description | Execution Steps | Expected Results | Pass/Fail |
|---|---|---|---|
| Diner signs up an account.<br><br>Diner login the account registered to the system. | 1. Click “Sign Up” in home page.<br>2. Fill in all the information required.<br>3. Click on “Register Now”<br>4. Click “Close” to close “Account Sign Up” modal.<br>5. Click on “Login”<br>6. Fill in email address and password used to register account just now<br>7. Click on “Log In” | 1. Account is registered successfully. System will prompt message “Sign up was successful! Please Log in!”.<br><br>2. Account is logged in successfully. System will navigate user to “New Reservation” page. | Pass |
| Diner makes a new reservation.<br><br>Diner views the reservation details.<br><br>Diner cancels the reservation. | 1. Login account as diner.<br>2. Fill in all the information required to make reservation.<br>3. Click “Submit Reservation”<br>4. Navigate to “View Reservation” page<br>5. Click “Cancel” button | 1. Reservation is made successfully. System will prompt message “Reservation successful!”<br><br>2. The new reservation made can be viewed in “View Reservation” page<br><br>3. The reservation is successfully cancelled. Its status is updated from “Pending” to “Cancelled”. System will prompt | Pass |

| | | | |
|---|---|---|---|
| | | message “Cancellation successful”. | |
| Diner makes a new reservation<br><br>Diner views the reservation details.<br><br>Diner edits the reservation. | 1. Login account as diner.<br>2. Fill in all the information required to make reservation.<br>3. Click “Submit Reservation”<br>4. Navigate to “View Reservation” page<br>5. Click “Edit” button<br>6. Modify reservation details with new valid information.<br>7. Click “Modify Reservation” button | 1. Reservation is made successfully. System will prompt message “Reservation successful!”<br><br>2. The new reservation made can be viewed in “View Reservation” page<br><br>3. The reservation is successfully updated. Its status is updated from “Pending” to “Edited”. System will prompt message “Edit successful! (Reservation ID: )”. | Pass |
| Diner makes a new reservation.<br><br>Diner pre-orders foods for the new reservation.<br><br>Diner views the pre-ordered food list in that reservation. | 1. Login account as diner.<br>2. Fill in all the information required to make reservation.<br>3. Click “Submit Reservation”<br>4. Click “Ok” to starts pre-ordering food<br>5. Add foods into order<br>6. Click “Checkout” button<br>7. Navigate to “Food Pre-Order” page<br>8. Click “View” button | 1. Reservation is made successfully. System will prompt message “Reservation successful!”<br><br>2. User is successfully navigated to a page to perform food pre-ordering.<br><br>3. Food pre-ordered is recorded with the reservation. The system will prompt “Food pre-order successful” | Pass |

| | | | |
|---|---|---|---|
| | | 4. A list of pre-ordered food is display and can be viewed. | |
| Diner selects a reservation and pre-order food for the selected reservation.<br><br>Diner edits the pre-ordered food list by adding some dishes and then view it. | 1. Navigate to "Food Pre-Order"<br>2. Click "Pre-Order" button.<br>3. Add foods into order<br>4. Click "Checkout" button<br>5. Click "Edit" button<br>6. Modify the pre-ordered food list by adding food.<br>7. Navigate back to "Food Pre-Order"<br>8. Click "View" | 1. Food pre-ordered is recorded with the reservation. The system will prompt "Food pre-order successful"<br><br>2. The dish is added successfully. The system will prompt a message "Dish ID: is added successfully".<br><br>3. The pre-ordered food list is displayed and viewable. | Pass |

Table 7-27: Admin Module Integration Test Case and Results

| **Test Case Description** | **Execution Steps** | **Expected Results** | **Pass/Fail** |
|---|---|---|---|
| Admin makes a new reservation.<br><br>Admin views the reservation details.<br><br>Admin confirms the reservation. | 1. Login admin account.<br>2. Fill in all the information required to make reservation.<br>3. Click "Submit Reservation"<br>4. Navigate to "View Reservation" page<br>5. Click "Confirm" button | 1. Reservation is made successfully. System will prompt message "Reservation successful!"<br><br>2. The new reservation made can be viewed in "View Reservation" page<br><br>3. The reservation is successfully confirmed. Its | Pass |

| | | | |
|---|---|---|---|
| | | status is updated from "Pending" to "Confirmed". System will prompt message "You have confirmed reservation ID". | |
| Admin makes a new reservation,<br><br>Admin views the reservation details.<br><br>Admin rejects the reservation. | 1. Login admin account.<br>2. Fill in all the information required to make reservation.<br>3. Click "Submit Reservation"<br>4. Navigate to "View Reservation" page<br>5. Click "Reject" button | 1. Reservation is made successfully. System will prompt message "Reservation successful!"<br><br>2. The new reservation made can be viewed in "View Reservation" page<br><br>3. The reservation is successfully confirmed. Its status is updated from "Pending" to "Rejected". System will and prompt message "You have rejected reservation ID". | Pass |
| Admin makes a new reservation<br><br>Admin views the reservation details.<br><br>Admin edits the reservation. | 1. Login admin account.<br>2. Fill in all the information required to make reservation.<br>3. Click "Submit Reservation"<br>4. Navigate to "View Reservation" page<br>5. Click "Edit" button<br>6. Fill in new valid information to replace | 1. Reservation is made successfully. System will prompt message "Reservation successful!"<br><br>2. The new reservation made can be viewed in "View Reservation" page<br><br>3. The reservation is successfully updated. Its status is updated from | Pass |

| | | | |
|---|---|---|---|
| | the reservation's details.<br>7. Click "Modify Reservation" button | "Pending" to "Edited". System will prompt message "Edit successful! (Reservation ID: )". | |
| Admin adds a new dish category into restaurant menu.<br><br>Admin selects the new dish category for the new dish when creating the new dish.<br><br>Admin views the newly added dish and dish category in restaurant menu. | 1. Navigate to "Manage Restaurant Menu"<br>2. Click "Add Dish Category"<br>3. Fill in new dish category name.<br>4. Click "Create New Category"<br>5. Close the "New Dish Category" modal<br>6. Click "Add New Dish"<br>7. Fill in all required fields for new dish details<br>8. Select the newly added dish category.<br>9. Click "Create New Dish"<br>10. Navigate to "View Restaurant Menu"<br>11. Click the newly added dish category. | 1. A new dish category is created successfully. The system will prompt a message "New Dish category is added successfully".<br><br>2. In dish category selection when creating new dish, there is one more option which is the newly added dish category.<br><br>3. The system will prompt a message "New Dish is added successfully". The new dish is categorized under the newly added category.<br><br>4. The system will display the new dish category and other categories. After clicking the new one, the newly added dish will be displayed | Pass |

| | | | |
|---|---|---|---|
| Admin removes a dish category from restaurant menu.<br><br>Admin views the dishes those previously categorized under the removed dish category in "Manage Restaurant Menu" page.<br><br>Admin views the restaurant menu and dishes in "Others" dish category | 1. Navigate to "Manage Restaurant Menu"<br>2. Click "Remove Dish Category"<br>3. Select a dish category.<br>4. Click "Remove Category" button<br>5. Close the "Remove Dish Category" modal<br>6. Navigate to "View Restaurant Menu"<br>7. Click "Others" dish category | 1. The system will prompt "Dish category is removed successfully".<br><br>2. All the dishes categorized under the removed dish category are successfully updated to "Others".<br><br>3. Removed dish category is no longer visible in restaurant menu.<br><br>4. All the dishes categorized under the removed dish category are now displayed under "Others" dish category in restaurant menu. | Pass |
| Admin activates the inactive dish.<br><br>Admin views the activated dish in restaurant menu. | 1. Navigate to "Manage Restaurant Menu"<br>2. Click "Activate" on inactive dish<br>3. Navigate to "View Reservation" | 1. System will prompt a message "Dish ID is activated successfully"<br><br>2. The activated dish is now visible in restaurant menu. | Pass |
| Admin de-activates the active dish.<br><br>Admin views and looks for de-activated dish in restaurant menu. | 1. Navigate to "Manage Restaurant Menu"<br>2. Click "De-activate" on active dish<br>3. Navigate to "View Reservation" | 1. System will prompt a message "Dish ID is de-activated successfully"<br><br>2. The de-activated dish is now invisible in restaurant menu. | Pass |

| | | | |
|---|---|---|---|
| Admin creates a new dish in “Manage Restaurant Menu” page.<br><br>Admin edits the newly created dish.<br><br>Admin changes the photo of the edited dish.<br><br>Admin views the new dish in restaurant menu | 1. Navigate to “Manage Restaurant Menu”<br>2. Click “Add New Dish”<br>3. Fill in all valid information<br>4. Click “Create New Dish”<br>5. Click “Edit” on new dish<br>6. Fill in new valid information to replace old details.<br>7. Click “Modify Dish” button.<br>8. Click “Change Photo” on edited dish<br>9. Choose an image file (file size < 2MB).<br>10. Click “Change Dish Photo”<br>11. Navigate to “View Restaurant Menu” | 1. The system will prompt a message “New dish is added successfully.” The new dish is now available in restaurant menu.<br><br>2. The system will prompt a message “Dish ID is modified successfully.”. The dish details are updated in restaurant menu.<br><br>3. The system will prompt a message “Dish photo is changed successfully.”. The dish photo is updated in restaurant menu.<br><br>4. The system will display the new dish in restaurant menu. After editing that dish details and photo, the system will display the updated dish in restaurant menu. | Pass |

Table 7-28: Diner and Admin Module Integration Test Case and Results

| **Test Case Description** | **Execution Steps** | **Expected Results** | **Pass/Fail** |
|---|---|---|---|
| Diner makes a new reservation. | 1. Diner navigates to “New Reservation” to make reservation | 1. The system will display “Reservation successful”, indicating the reservation is successfully made. | Pass |

| | | | |
|---|---|---|---|
| Admin rejects that reservation. Email notification is sent to diner.<br><br>Diner modifies the rejected reservation.<br><br>Admin confirmed the modified reservation Email notification is sent to diner. | 2. Diner fills in all valid reservation details and click "Submit Reservation".<br>3. Admin navigates to "View Reservations"<br>4. Admin clicks "Reject" button.<br>5. Diner navigates to "View Reservations"<br>6. Diner modify the rejected reservation<br>7. Admin navigates to "View Reservations" again.<br>8. Admin clicks "Confirm" to confirm the edited reservation. | 2. The new reservation made by the diner is able to be viewed by admin in reservation list.<br><br>3. A message "You have rejected a reservation (ID)" is prompted. Another message "Email has been sent" is prompted as well.<br><br>4. The modification on rejected reservation by diner is successful. The reservation status is updated to "Edited".<br><br>5. A message "You have confirmed a reservation (ID)" is prompted. Another message "Email has been sent" is prompted as well. | |
| Admin de-activates an active dish<br><br>Diner attempts to pre-order the de-activated dish. | 1. Admin navigates to "Manage Restaurant Menu" page<br>2. Admin de-activates "Pasta A" dish<br>3. Diner navigates to "Food Pre-Order".<br>4. Diner selects a reservation and click "Pre-Order" button | 1. A message "Dish ID is de-activated" is prompted. "Pasta A" is inactive.<br><br>2. Diner will be unable to find and pre-order "Pasta A". | Pass |

| | | | |
|---|---|---|---|
| | 5. Diner attempts to add “Pasta A” into the order. | | |
| Admin creates a new dish and categorizes it into newly added dish category.<br><br>Diner pre-orders 10 new dish.<br><br>Admin views the “Most Popular Dish By Category” report. | 1. Admin navigates to “Manage Restaurant Menu” page<br>2. Admin creates a new dish category.<br>3. Admin creates a new dish by entering all valid details, including the new dish category.<br>4. Diner navigates to “Food Pre-Order”.<br>5. Diner selects a reservation and click “Pre-Order” button<br>6. Diner adds 10 quantity of the new dish into order<br>7. Diner clicks “Checkout” button.<br>8. Admin navigates to “View Report” page<br>9. Admin selects and views “Most Popular Dish By Category” report. | 1. A message “New Dish Category is added successfully” is prompted.<br><br>2. A message “New Dish is added successfully” is prompted.<br><br>3. A message “Food pre-order successful” is prompted. The dish with 10 quantity is added into pre-ordered food list.<br><br>4. “Most Popular Dish By Category” report is successfully generated.<br><br>5. The new dish with its number of pre-orders and new dish category can be found in “Most Popular Dish By Category” report. | Pass |
| Diner registers a new account, with username “elma319” | 1. Diner clicks “Sign Up” to create account. | 1. Account is successfully created. | Pass |

| | | | |
|---|---|---|---|
| Diner makes a new reservation.<br><br>Admin views "Table Booking Frequency" report. | 2. Diner clicks "Login" to login account.<br>3. Diner makes a reservation by entering all valid information.<br>4. Diner clicks "Submit Reservation".<br>5.Admin navigates to "View Report" page.<br>6. Admin select "All Customers" report type and "Table Booking Frequency" report.<br>7. Admin clicks "View Report" to generate report. | 2. Diner logins successfully and is redirected to "New Reservation" page to make new reservation.<br><br>3. A message "Reservation successful!" is prompted, indicating reservation is successfully made.<br><br>4. "Table Booking Frequency" report is generated successfully.<br><br>5. The diner with username "elma319" can be found in the report. The number of reservations made by "elma319" is 1. | |

## 7.6 User Acceptance Testing (UAT)

### 7.6.1 User Acceptance Testing (UAT) Requirements-Based Test Cases

Table 7-29: User Acceptance Testing Test Cases for Diner

| ID | Test Cases | Expected Result |
|---|---|---|
| TC01_UAT | Sign Up Account<br>• Click on "Sign Up"<br>• Fill in the following credentials<br>- Username: mavako1999<br>- Email: mavako1999@cytsl.com<br>- Password: 123456<br>• Check the "Term of Use" checkbox<br>• Click on "Register Now" | Diner account will be signed up successfully. |
| TC02_UAT | Log in Account<br>• Click on "Login"<br>• Fill in the following credentials<br>- Username: mavako1999<br>- Password: 123456<br>• Click on "Log In" | User will be successfully logged into the system.<br><br>User will be redirected to "New Reservation" web page. |
| TC03_UAT | Make Reservation<br>• Login with the following credentials<br>- Username: mavako1999<br>- Password: 123456<br>• Fill in all the reservation details<br>• Click "Submit Reservation" button<br>• Click "Cancel" to not perform food pre-order | Reservation will be made successfully. |

| | | |
|---|---|---|
| TC04_UAT | Food Pre-Order<br>• Navigate to "Food Pre-order" web page<br>• Click "Pre-Order" on newly created reservation<br>• Add the following dishes:<br>- 2 Laksa Johor<br>- 1 Adisio Coffee<br>- 1 Brown Sugar Boba Milk Tea<br>• Confirm and click "Checkout"<br>• View the pre-ordered food list in the reservation. | Food will be pre-ordered and added successfully.<br><br>When user views the pre-ordered food list, the list will have the following dishes:<br>- 2 Laksa Johor<br>- 1 Adisio Coffee<br>- 1 Brown Sugar Boba Milk Tea |
| TC05_UAT | Edit Pre-Ordered Food<br>• Navigate to "Food Pre-order" web page<br>• Click "Edit" on newly created reservation<br>• Add the following dishes:<br>- 2 Brown Sugar Boba Milk Tea<br>• Remove the following dishes:<br>- 1 Adisio Coffee<br>• Add the following new dishes which are not in the pre-ordered food list:<br>- 2 Soma Salad<br>- 1 Green Tea<br>• Confirm and click "Add New Dishes"<br>• View the pre-ordered food list in the reservation. | Pre-ordered food list will be modified successfully.<br><br>When user views the pre-ordered food list, the list will have the following dishes:<br>- 2 Laksa Johor<br>- 3 Brown Sugar Boba Milk Tea<br>- 2 Soma Salad<br>- 1 Green Tea |

| | | |
|---|---|---|
| TC06_UAT | Edit Reservation<br>• Navigate to "View Reservation" web page<br>• Click "Edit" button<br>• Modify all the reservation details<br>• Click "Modify Reservation" | Reservation will be modified successfully.<br><br>Status of modified reservation will be updated to "Edited". |
| TC07_UAT | Cancel Reservation<br>• Navigate to "View Reservation" web page<br>• Click "Cancel" button | Reservation will be cancelled successfully.<br><br>Status of reservation will be updated to "Cancelled". |
| TC08_UAT | View Restaurant Menu<br>• Navigate to "View Restaurant Menu" web page<br>• View any dish's details by moving mouse cursor on dish's image | All the dishes will be displayed in "View Restaurant Menu" web page<br><br>The detailed information of dish will be displayed |

Table 7-30: User Acceptance Testing Test Cases for Restaurateurs or Restaurant Staff (Admin Role)

| **ID** | **Test Cases** | **Expected Result** |
|---|---|---|
| TC11_UAT | Log in Account<br>• Click on "Login"<br>• Fill in the following credentials<br>- Username: kappa2<br>- Password: 12345678<br>• Click on "Log In" | Admin will be successfully logged into the system.<br><br>Admin will be redirected to "View Reservation" web page. |

| | | |
|---|---|---|
| TC12_UAT | Make Reservation<br>• Navigate to "New Reservation" page<br>• Fill in all the reservation details<br>• Click "Submit Reservation" button<br>• Click "Cancel" to not perform food pre-order | Reservation will be made successfully. |
| TC13_UAT | Confirm Reservation<br>• Navigate to "View Reservation" web page<br>• Click "Confirm" button | Reservation will be confirmed and system will prompt a message stating an email is sent.<br><br>Status of reservation will be updated to "Confirmed". |
| TC14_UAT | Reject Reservation<br>• Navigate to "View Reservation" web page<br>• Click "Reject" button | Reservation will be rejected and system will prompt a message stating an email is sent.<br><br>Status of reservation will be updated to "Rejected". |
| TC15_UAT | Edit Reservation<br>• Navigate to "View Reservation" web page<br>• Click "Edit" button<br>• Modify all the reservation details<br>• Click "Modify Reservation" | Reservation will be modified successfully.<br><br>Status of modified reservation will be updated to "Edited". |

| | | |
|---|---|---|
| TC16a_UAT | Export Reservation List to Excel File<br>• Navigate to "View Reservation" web page<br>• Click "Print/Export Reservation List"<br>• Select any reservation<br>• Select "Excel" file type<br>• Click "Export" | An Excel file containing selected reservation list will be downloaded. |
| TC16b_UAT | Export Reservation List to PDF File<br>• Navigate to "View Reservation" web page<br>• Click "Print/Export Reservation List"<br>• Select any reservation<br>• Select "PDF" file type<br>• Click "Export" | A PDF file containing selected reservation list will be displayed in a new tab. |
| TC17_UAT | Create New Dish<br>• Navigate to "Manage Restaurant Menu" web page<br>• Click "Add New Dish"<br>• Fill in the new dish details<br>• Choose a valid dish photo<br>• Click "Create New Dish" | Dish will be successfully created and displayed in restaurant menu. |
| TC18_UAT | Edit Dish Details<br>• Navigate to "Manage Restaurant Menu" web page<br>• Click "Edit" on any dish<br>• Modify all the dish details<br>• Click "Update Dish" button | Dish's details will be modified and updated successfully. |

| | | |
|---|---|---|
| TC19_UAT | Activate/Deactivate Dish<br>• Navigate to "Manage Restaurant Menu" web page<br>• Click "Activate" button on inactive dish<br>• Click "Deactivate" button on active dish | Inactive dish will be activated and updated into active.<br><br>Active dish will be deactivated updated into inactive. |
| TC20_UAT | Create Dish Category<br>• Navigate to "Manage Restaurant Menu" web page<br>• Click "Add Dish Category" button<br>• Fill in name for new dish category<br>• Click "Create New Category" button | A new dish category will be created successfully. |
| TC21_UAT | Remove Dish Category<br>• Navigate to "Manage Restaurant Menu" web page<br>• Click "Remove Dish Category" button<br>• Select a dish category<br>• Click "Remove Category" button | Selected dish category will be removed successfully. |
| TC22_UAT | Change Dish Photo<br>• Navigate to "Manage Restaurant Menu" web page<br>• Click "Change Photo"<br>• Choose a valid dish photo<br>• Click "Change Photo" | Dish photo will be updated successfully. |

| | | |
|---|---|---|
| TC23_UAT | Food Pre-Order<br>• Navigate to "Food Pre-order" web page<br>• Click "Pre-Order" on newly created reservation<br>• Add the following dishes:<br>- 2 Laksa Johor<br>- 1 Adisio Coffee<br>- 1 Brown Sugar Boba Milk Tea<br>• Confirm and click "Checkout"<br>• View the pre-ordered food list in the reservation | Food will be pre-ordered and added successfully.<br><br>When user views the pre-ordered food list, the list will have the following dishes:<br>- 2 Laksa Johor<br>- 1 Adisio Coffee<br>- 1 Brown Sugar Boba Milk Tea |
| TC24_UAT | Edit Pre-Ordered Food<br>• Navigate to "Food Pre-order" web page<br>• Click "Edit" on newly created reservation<br>• Add the following dishes:<br>- 2 Brown Sugar Boba Milk Tea<br>• Remove the following dishes:<br>- 1 Adisio Coffee<br>• Add the following new dishes which are not in the pre-ordered food list:<br>- 2 Soma Salad<br>- 1 Green Tea<br>• Confirm and click "Add New Dishes"<br>• View the pre-ordered food list in the reservation. | Pre-ordered food list will be modified successfully.<br><br>When user views the pre-ordered food list, the list will have the following dishes:<br>- 2 Laksa Johor<br>- 3 Brown Sugar Boba Milk Tea<br>- 2 Soma Salad<br>- 1 Green Tea |

| | | |
|---|---|---|
| TC25_UAT | View Report<br>• Navigate to “View Report” web page<br>• Select any report, type, and valid date range<br>• Click “View Report” button | Report will be generated in a new tab. |
| TC26a_UAT | Export Report to Excel File<br>• Navigate to “View Report” web page<br>• Select any report, type, and valid date range<br>• Click “View Report” button<br>• Click “Export to Excel File” button | An Excel file containing generated report will be downloaded. |
| TC26b_UAT | Export Report to PDF File<br>• Navigate to “View Report” web page<br>• Select any report, type, and valid date range<br>• Click “View Report” button<br>• Click “Export to PDF File” button | A PDF file containing generated report will be displayed in a new tab. |
| TC27_UAT | View Restaurant Menu<br>• Navigate to “View Restaurant Menu” web page<br>• View any dish’s details by moving mouse cursor on dish’s image | All the dishes will be displayed in “View Restaurant Menu” web page<br><br>The detailed information of dish will be displayed |

### 7.6.2 User Acceptance Testing (UAT) Test Results Analysis

The table 0-1 and table 0-2 in Appendix D show user acceptance testing (UAT) result from several participants. UAT in table 0-1 is for 2 participants who will act as restaurant's customer, also known as diner in real life, while in table 0-2 is for 1 participant who has real life experience in restaurant customer service.

As shown in test result in Appendix D, all participants pass all the testing designed. Even though all tests are passed, there are some challenges faced by participants during user acceptance testing. When participants executed test cases ID TC04_UAT and TC23_UAT, which the tasks of these both test cases are to pre-order food, all the participants took too much time in finding "Checkout" button to complete food pre-ordering because the "Checkout" button is located at the bottom of the "Food Pre-Order" web page.

# CHAPTER 8

# CONCLUSION AND RECOMMENDATION

## 8.1 Conclusion

Web-based restaurant reservation system provides useful functionalities and features to ease the reservation management and table booking by digitally transforming them to replace traditional and paper-based method in handling table booking.

The system aids the restaurateurs to manage the incoming reservation made by their customers without any paper-based approach. With this system, restaurateurs are able to manage food pre-ordered by customers, restaurant menu, view report and export reservation list and report. In restaurant menu management, restaurateurs are able to insert, modify, activate or inactivate the dish, insert or remove dish category as well as change dish's photo.

Furthermore, customers, also known as diners are able to make a reservation as well as modify and cancel reservation with ease. Other than table booking feature, customers can also pre-order foods for the reservation and modify it in effective and time-saving way.

All the functionalities and features in this system are tested with the designed requirement-based test cases. Besides that, non-functional testing such as browser compatibility testing is performed. All the test cases are executed and passed. Therefore, all the functional and non-functional requirements are fulfilled and the project objectives are achieved as well.

## 8.2 Recommendation for Future Work

Even though this web-based system has fulfilled all requirements listed in chapter 4 and achieved project objectives, there are some limitations and flaws which can be improved in future work. Table 8-1 below shows and explains limitations of the system and recommendation for enhancing the flaw of the system.

Table 8-1: Limitation and Recommendation for Future Work

| No. | Limitation | Recommendation for Improvement |
|---|---|---|
| 1. | Forgot password and change or reset password is not available | The feature of changing and forgetting password is important in case user forgets their password or user wants to change their password frequently for security purpose, and therefore, the system should allow user to change or reset password. |
| 2. | Payment gateway is not available | Payment gateway provides more convenience to both users, which are restaurateurs and customers to make transaction. If payment gateway is implemented, the fee such as booking fee, and payment for pre-ordered food can be paid in the system. |
| 3. | Import Feature is not available | Since there is an export feature in the system, import feature should be also included as well to allow restaurateurs to modify and update the reservation or other data manually. |
| 4. | Single platform development | The system can only be accessed with browser and internet connection. Nowadays, mobile application development is currently “booming” trends since everyone owns a smartphone due to the increased accessibility to information. Therefore, mobile website or application can be developed so that more customers can be reached. |

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# APPENDICES

## APPENDIX A: Questionnaire

### Restaurant Reservation Questionnaire

First of all, I would like to say thank you for sparing your time to answer this questionnaire. This questionnaire divided into two parts, where first part is for customers while second part is for restaurant owner. All the responses will be collected and used in the project of developing restaurant reservation system.

Please tick (/) the box provided next to the answer or fill in your answer in the space provided.

**Customer**

1. What method you use to make a reservation in a restaurant?
   - □ Phone calls
   - □ Message through social media platform
   - □ Directly visit the restaurant
   - □ Other: _____

2. What are the problems you encountered when you make a reservation using the method you chosen in question 4? (You may choose more than 1 option)
   - □ Time-consuming
   - □ Difficulty in getting a table on specific date
   - □ Reservation policy
   - □ Late reply from the restaurant
   - □ Other: _____

3. Have you heard of online restaurant reservation system?
   - □ Yes
   - □ No

4. As a restaurant customer, what are the functionalities and features you expected to be included in restaurant reservation system? (You may choose more than 1 option)

   □ Able to make changes on reservation

   □ Able to pre-order food for reservation and make payment for pre-ordered foods

   □ Able to send notification reminder of my reservation

   □ Others: _____

**Restaurant Owner**

5. Do you have experience in managing table reservation made by customers? If yes, what are the method(s) you using to record and keep track of the reservations? (You may choose more than 1 option)

   □ Traditional method (pencil, notebook, calendar, etc.)

   □ Notebook in mobile phone or laptop

   □ Online reservation system

   □ No

6. As a restaurant owner, what are the issues and challenges encountered when helping customers to make reservation? (You may choose more than 1 option)

   □ Unable to pick up phone in time due to busy hours

   □ Difficulty in checking for availability of tables on specific time

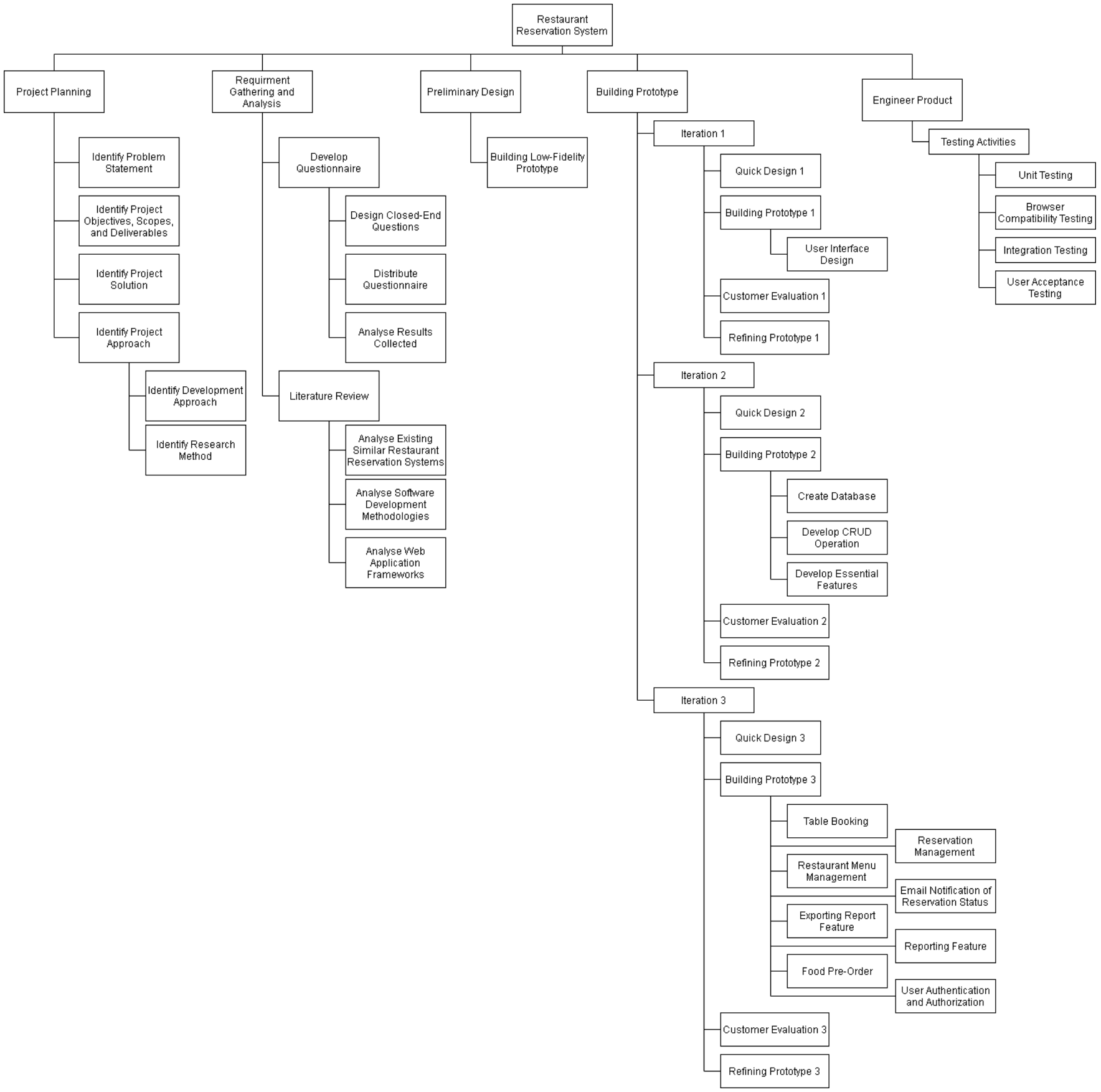
   □ Difficulty in searching for reservation record when customer wants to make changes on reservation

   □ Others: _____

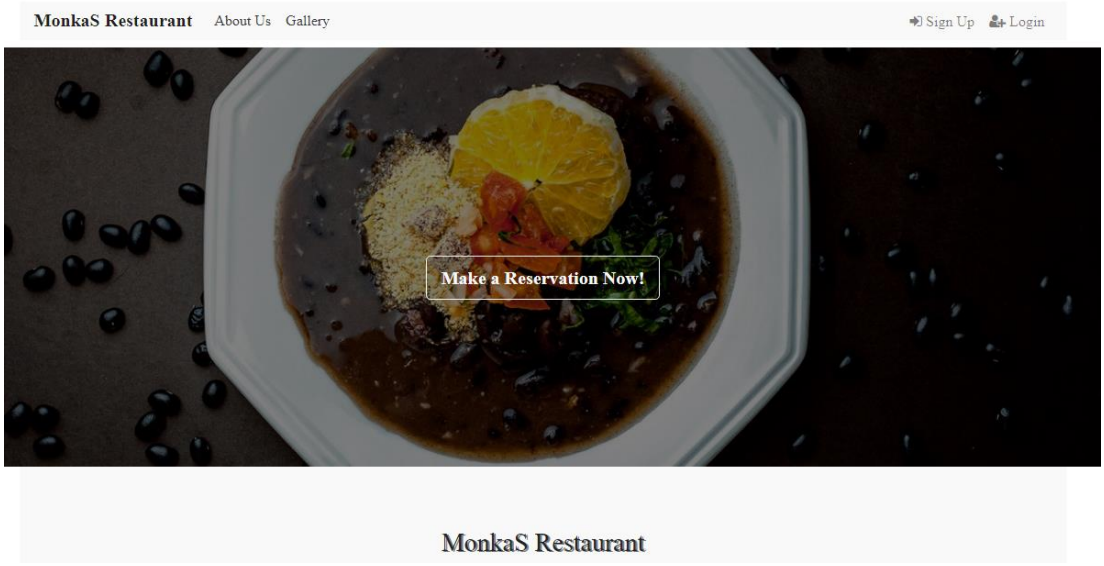
7. What are the most important factors that influence you to use restaurant reservation system? (You may choose more than 1 option)
   - □ Increase revenue and greater sales
   - □ Ease of managing and tracking the reservations
   - □ Fewer no-shows
   - □ More efficient in planning resource (food preparation, etc)
   - □ Others: _____

8. As a restaurant owner, what are the functionalities and features you expected to be included in restaurant reservation system? (You may choose more than 1 option)
   - □ Ability to make payment for booking fee
   - □ Ability to fully manage and keep track all the reservation records
   - □ Ability to confirm and reject reservation requested by customers
   - □ Ability to set a time limit for table reserved by customers
   - □ Others: _____

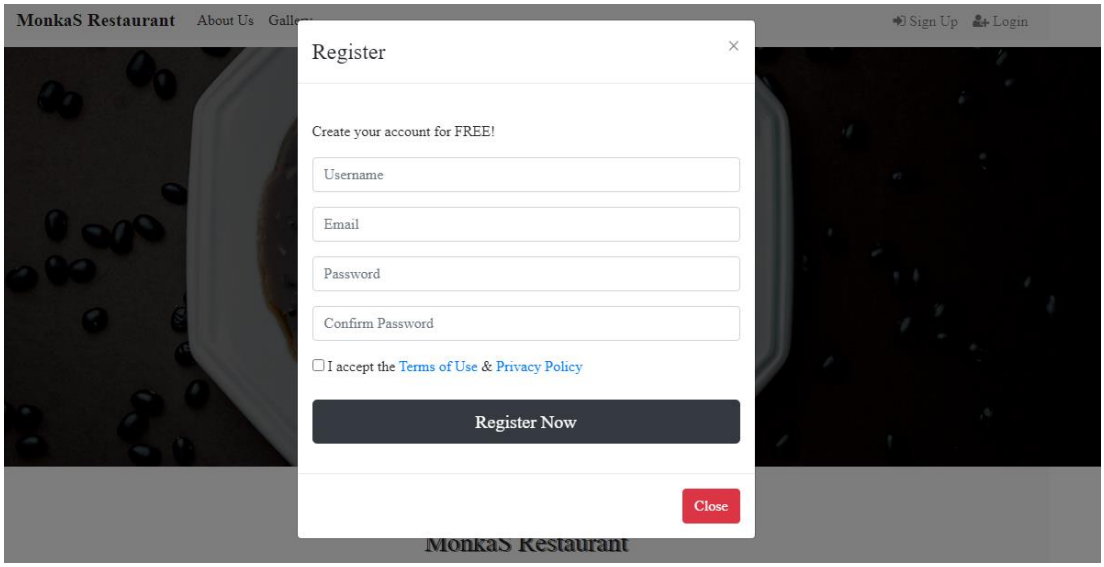
# APPENDIX B: Work Breakdown Structure Diagram



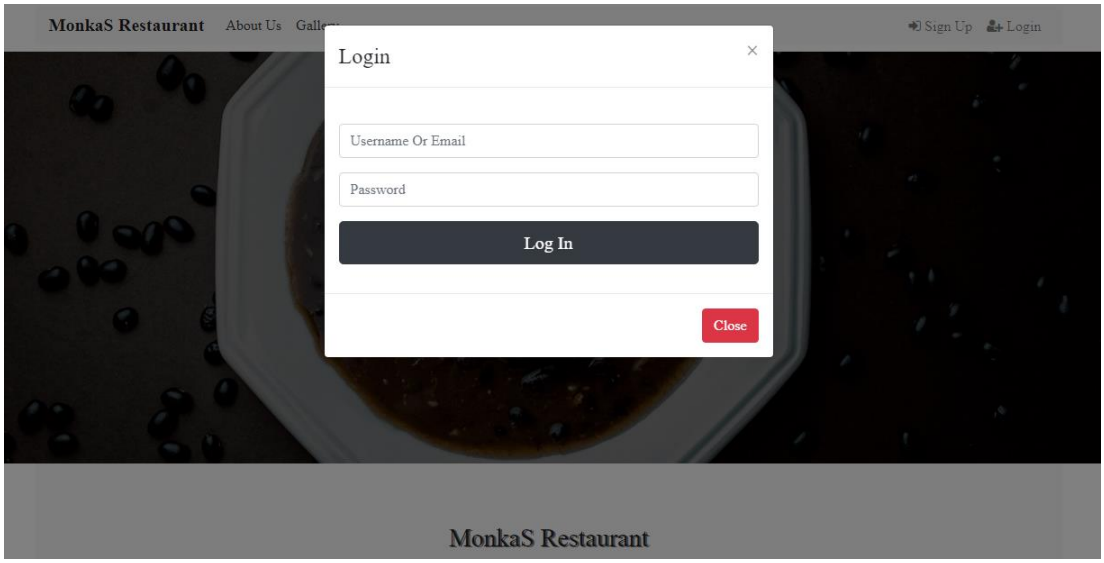
# APPENDIX C: Screenshot of Restaurant Reservation System



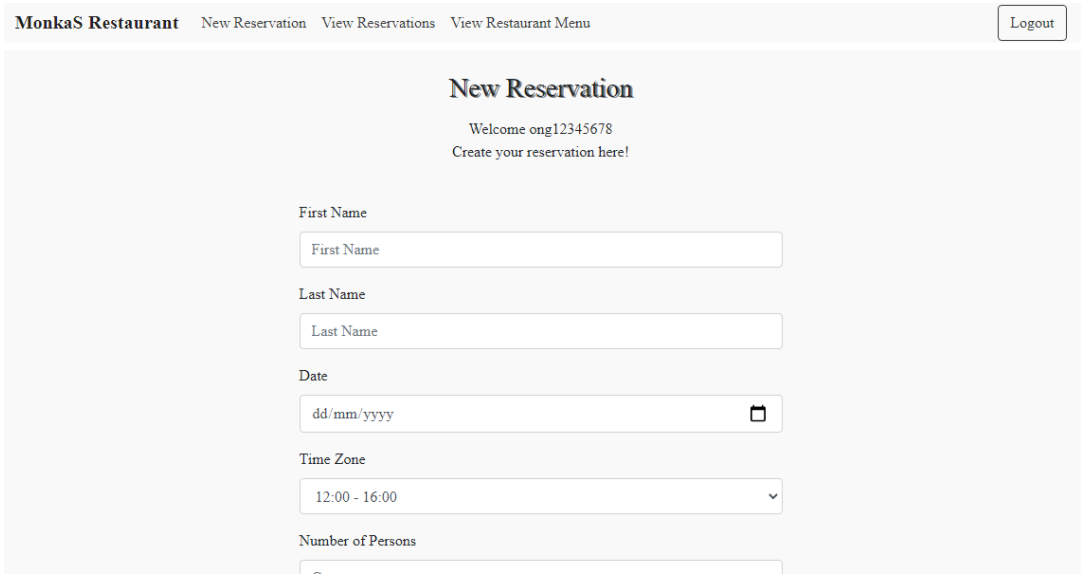

Restaurant Reservation System Main Page




Account Sign Up Form Modal




Account Login Form Modal

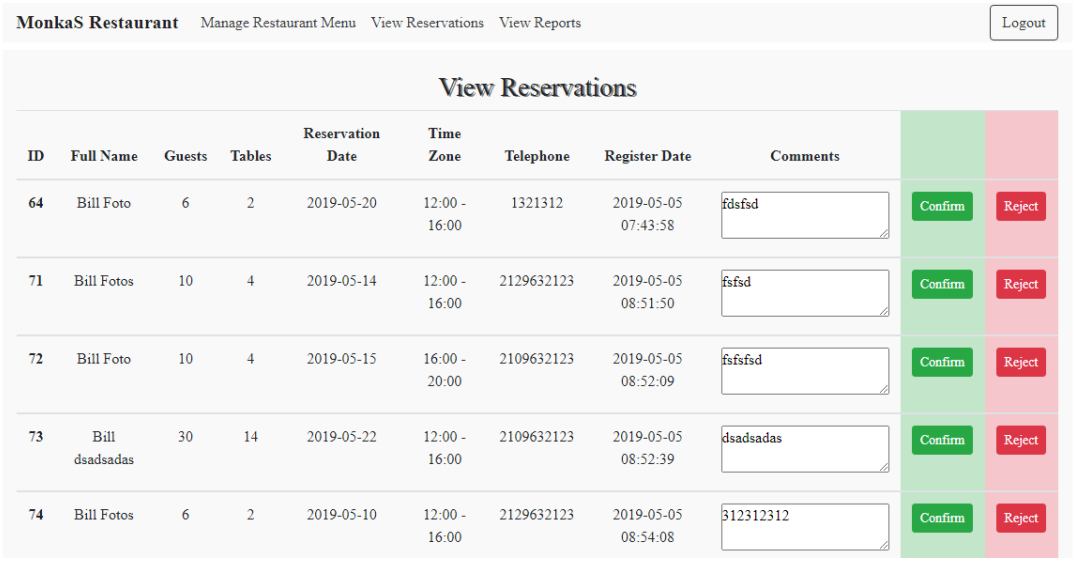



Create Reservation Page (For Diner)

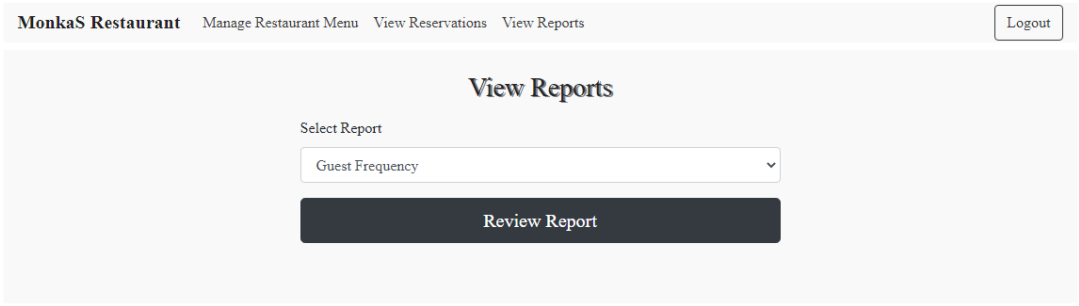

View Reservations Page (For Dinner)


View Restaurant Menu Page (For Customer)


Restaurant Menu Management Page (For Admin)




View Reservations Page (For Admin)




View Report Page (For Admin)

# APPENDIX D: User Acceptance Testing Results from Participants

Table D-1: User Acceptance Test Cases Result - Diner Role

| | **Assign To:** | **Participant 1** | **Participant 2** |
|---|---|---|---|
| **ID** | **Test Case** | **Pass/Fail** | **Pass/Fail** |
| TC01_UAT | Sign Up Account | Pass | Pass |
| TC02_UAT | Log in Account | Pass | Pass |
| TC03_UAT | Make Reservation | Pass | Pass |
| TC04_UAT | Food Pre-Order | Pass | Pass |
| TC05_UAT | Edit Pre-Ordered Food | Pass | Pass |
| TC06_UAT | Edit Reservation | Pass | Pass |
| TC07_UAT | Cancel Reservation | Pass | Pass |
| TC08_UAT | View Restaurant Menu | Pass | Pass |
| **Signature from Participants** | | | |
| Participant 1<br><br>Signature:  <br>Name: Lim Yiing Haw<br>Date: 18 August 2021 | | Participant 2<br><br>Signature:  <br>Name: Ong Jun Hui<br>Date: 18 August 2021 | |

Table D-2: User Acceptance Test Cases Result - Admin Role

| | **Assign To:** | **Participant 1** |
|---|---|---|
| **ID** | **Test Case** | **Pass/Fail** |
| TC11_UAT | Login Account | Pass |
| TC12_UAT | Make Reservation | Pass |
| TC13_UAT | Confirm Reservation | Pass |
| TC14_UAT | Reject Reservation | Pass |
| TC15_UAT | Edit Reservation | Pass |
| TC16a_UAT | Export Reservation List to Excel File | Pass |
| TC16b_UAT | Export Reservation List to PDF File | Pass |
| TC17_UAT | Create New Dish | Pass |
| TC18_UAT | Edit Dish Details | Pass |
| TC19_UAT | Activate/Deactivate Dish | Pass |
| TC20_UAT | Create Dish Category | Pass |
| TC21_UAT | Remove Dish Category | Pass |
| TC22_UAT | Change Dish Photo | Pass |
| TC23_UAT | Food Pre-Order | Pass |
| TC24_UAT | Edit Pre-Ordered Food | Pass |
| TC25_UAT | View Report | Pass |
| TC26a_UAT | Export Report to Excel File | Pass |
| TC26b_UAT | Export Report to PDF File | Pass |
| TC27_UAT | View Restaurant Menu | Pass |
| **Signature from Participants** | | |

Signature: 

Name: Chu Chia Yun

Date: 16 August 2021

# APPENDIX E: Feedback for Project 1

| | |
|---|---|
| **Project title:** | Restaurant Reservation System |
| **Student Name** | ONG JUN KIT |
| **Supervisor** | Ms Gunavathi a/p Duraisamy |
| **Moderator** | Dr Maryam Khanian Najafabadi |

| Key Assessment for Project Proposal | Supervisor Comments/Remarks | Moderator Comments/Remarks |
|---|---|---|
| **Project Description**<br>- Is the problem or need to be addressed clearly presented?<br>- Is the proposed approach or solution clearly presented and justified? | **- Need to add in the survey results to support the problem statement** | **The problems are defined without proper analysis of the data.** |
| **Project Scope and Objectives**<br>- Is the scope of the project clearly defined?<br>- Are the objectives of the project clearly specified?<br>- Are the project scope and objectives appropriate for afinal year project? | **- Objective need to be refined** | **Objectives should be improved to show methods used.** |
| **Literature Review / Fact Finding for Benchmarking / Verification of Project**<br>- Are sources for literature review / fact finding appropriate?<br>- Is information from literature review / fact finding relevant and adequate?<br>- Is information from literature review / fact finding clearly presented and discussed? | **Ok.** | **A number of previous works have been reviewed. Yes** |
| **Research/Development Methodology and Development Tools**<br>- Is the methodology for the project clearly described and discussed?<br>- Are the required development tools clearly described and discussed?<br>- Are the stated methodology and development tools appropriate? | **- need to explain and elaborate on the technology or tools to be used.** | **This part may need to be modified based on the objectives** |
| **Project Plan**<br>- Are the phases and tasks of the project properly defined and planned?<br>- Are the phases and tasks consistent with the methodology of the project? | **-no test plan** | **Yes** |
| **Initial Deliverables**<br>- Are deliverables (e.g. use case diagrams and descriptions) of initial phases of the project plan included in the report? | **Ok.** | **Yes** |
| **Report Structure and References**<br>- Is the report organised in a logical structure?<br>- Are references listed in accordance to Harvard format? | **Ok.** | [redacted] |
| **Language and Clarity of Writing**<br>- Are the sentences concise and understandable?<br>- Are there spelling and grammar issues? | **refer to marked report for comments** | |