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ECC4207 WEB AND DATABASE

PROJECT REPORT OF ONLINE FOOD DELIVERY SYSTEM (PutraBiz)

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1.0 Introduction

In today's world, the utilization of different varieties of technologies has been integrated into the everyday lives of mankind. With the aid of such revolutionizing technologies, our generation has made huge strides in a short amount of time. Success can be seen in all fields including manufacturing, agriculture, communications and even business. Particularly in the context of business, technology has now become essential since it enables a more effective, faster, and simpler means of operating a profession. An example of such a profession is a restaurateur. Technology has made it easy for people to order food from restaurants from the comfort of their own home and deliver the ordered food right in front of their doorsteps. Although food delivery is still relatively new, it is a constantly emerging business that has the potential to become an industry in and of itself. Most eateries are now opting to create their own applications and delivery services. Others, on the other hand, find it more cost-effective to use current third-party platforms. Instances of such applications in Malaysia are GrabFood and Foodpanda.

The method of food delivery has been considerably altered by advances in such applications. Food delivery used to entail a physical interaction between the customer and the establishment from which they were ordering. The companies are cropping up all over the place with the sole intention of acting as middlemen between the buyer and the seller. These businesses oversee funneling orders from clients to restaurants, as well as picking up and delivering them. The ordering process, which is simple and direct, is what makes these companies trustworthy. These same companies also act as mediators in the event of a complaint, ensuring that client issues are addressed. As a result, the use of those applications can be seen exponentially increasing, especially when the Covid-19 pandemic occurred. According to a 2020 Rakuten Insight survey on Malaysian consumers' food delivery behavioral changes during the pandemic, 58% of Malaysian respondents said they ordered food more frequently on food delivery apps during the pandemic, whereas only 2% said they had never used food delivery apps during the pandemic [1]. Even after dine-ins are allowed in many states, food delivery remains a safer option due to the Covid-19 figures remaining high.

In the rise of these applications, there has been the thought of cheaper alternatives other than the two behemoth companies, GrabFood and Foodpanda. Putrabiz is one of them. It is an online food delivery application that gives students of Universiti Putra Malaysia specifically, the opportunity to grasp the ease, convenience, and practicality of online food delivery concepts but at a more affordable price. The problem that this project aims to solve is food insecurities among students. Food insecurity is defined as the difficulty to obtain adequate food and nourishment [2]. In addition, food insecurity also refers to how it might

affect people. In general, it may have an impact on one's health because it is intertwined with other elements of life, and it is currently posing a threat to university students because it can damage their academic performance [3], behavior, mental, and health status [4]. With the presence of PutraBiz, students have an affordable and reasonable option to order food online thus helping in decreasing food insecurity cases among UPM students.

2.0 Objectives

The objective of this project is to create an online food delivery web application that consist of vendors local to Universiti Putra Malaysia, including cafeterias in colleges and personal businesses.

This project strengthens the following objectives:

1. Design a web application that allows administrators to oversee customers and vendors, vendors to display food menus, and users to choose options based on the menus given by vendors.

2. Identify and determine information required to complete a food delivery procedure involving ordering and delivery.

3. Test web design in terms of feasibility, usability, and compatibility.

3.0 Project Design

3.1 Flowchart Diagram

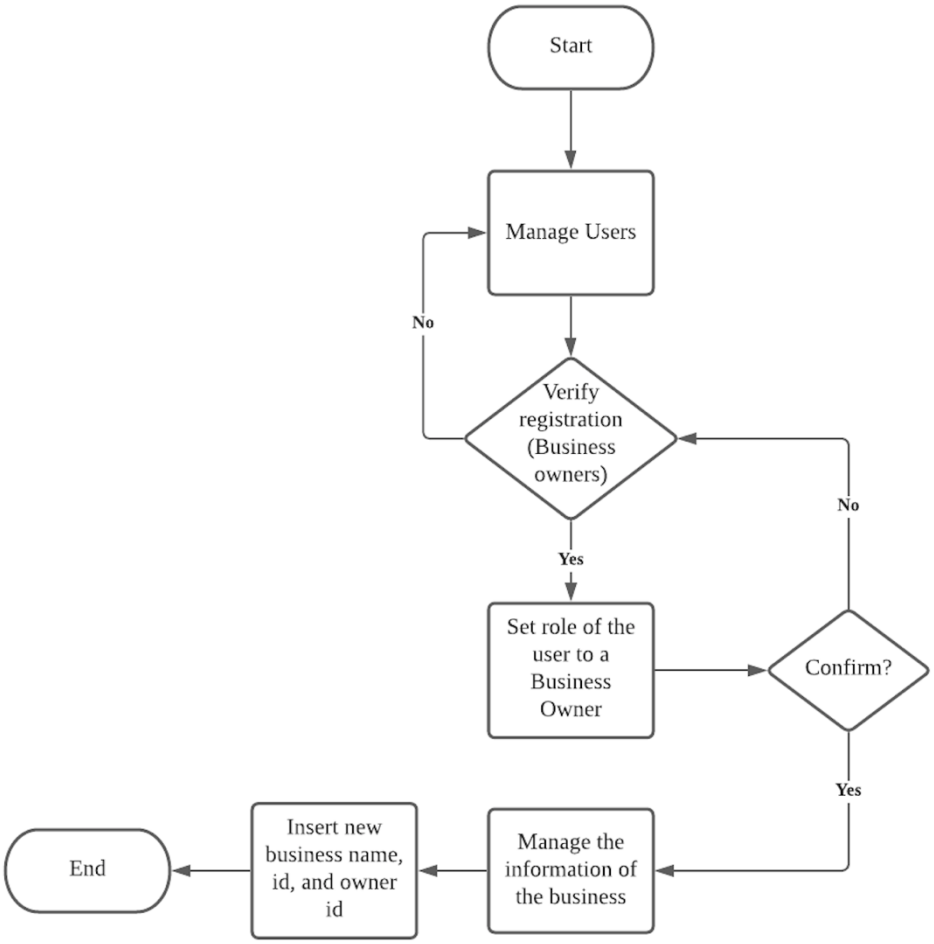

Figure 1: Flowchart of the system for the Administrator

Administrators have the ability to manage and modify the list of business owners and customers and their details including their addresses. The main role of the administrator is to verify whether the user is a business owner, or a customer as seen in Figure 1. For instance, when a business owner wishes to register, a verification from the administrator is necessary or the status of the registration process will be deemed incomplete. As a result, the owner will not be offered the features of a Business Owner on the website. On the other hand, if registration process is completed, the administrator sets the role of the user to Business Owner and proceeds to manage the information of the registered business. Lastly, the administrator inserts new business name, business ID, and owner ID since only the administrator knows the ID of every user.

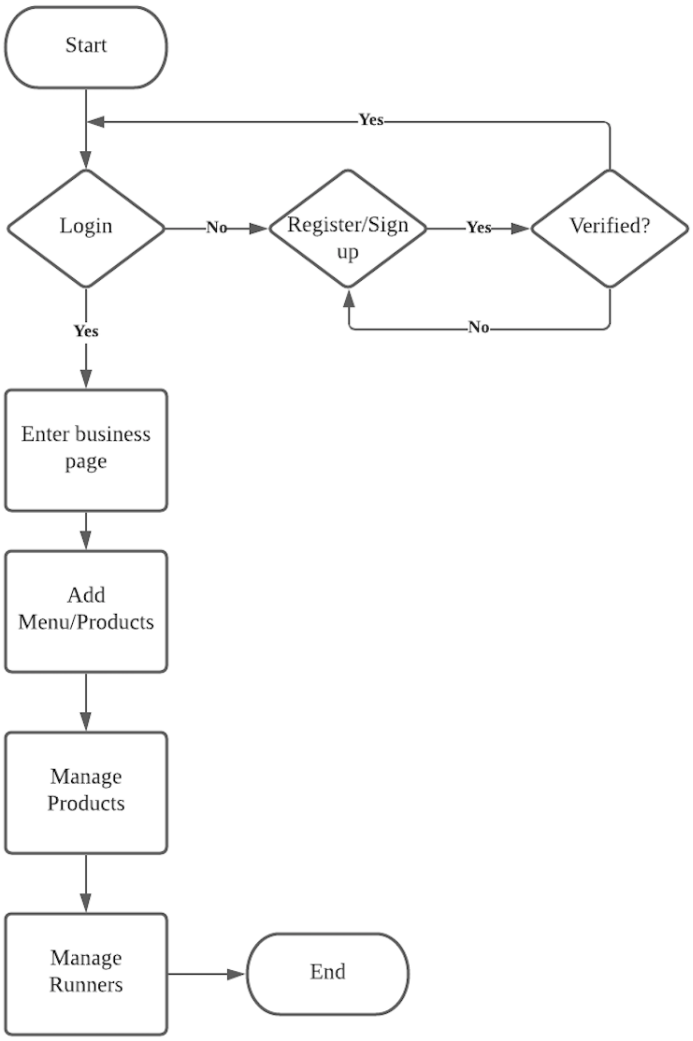

Figure 2: Flowchart of the system for Business owners

As seen in Figure 2, before logging in, a business owner must register within the website so that administrator can identify and save the data into the database. Upon registering, the business owner needs to wait for verification from the administrator to complete registration. Any errors made upon filling in information for registration, an owner needs to correct it. Furthermore, if the administrator does not verify the registration of the owner, the registration process will not be completed. A successful registration allows the owner to log in onto the website. An owner will be welcomed with the business owner's page, where option such as 'Add Menu/Products' is offered. Besides adding items to the menu, an owner can additionally manage and modify items. To complete the delivery process, owners must manage their own runners.

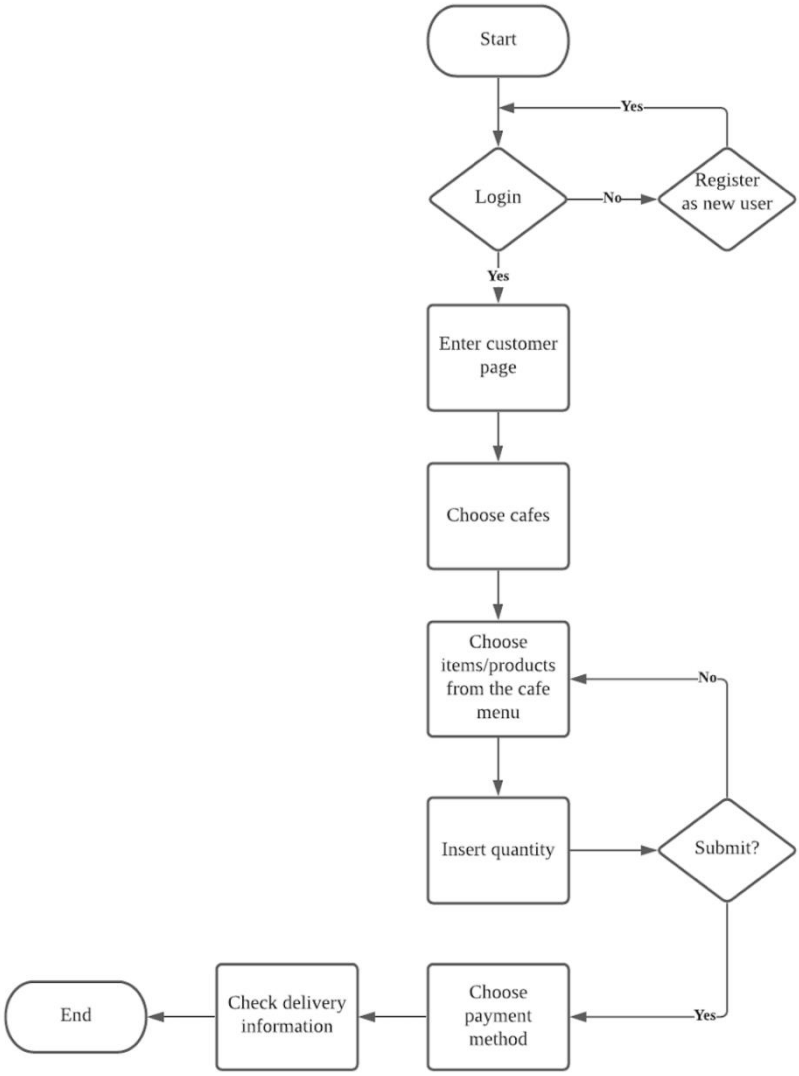

Figure 3: Flowchart of the system for Customers when ordering

Before the ordering process, a customer has to log in and if an account is not yet made, registration is necessary. Unlike the registration process for a Business Owner, a customer does not need to wait for verification from the administrator but can smoothly proceed to logging in onto the website. Once logged in, the customer page is displayed. In this page, a customer has a variety of cafeterias located in UPM to choose from. Once a decision is made, a customer is then again given an assortment of items/products from the chosen cafeteria. The customer can proceed to inserting the desired quantity of the items and submit. A customer also needs to choose the desired payment method. After confirmation, the customer will be displayed an order information to double-check. The customer is also given the freedom to check on the latest order information whenever.

3.2 System Interfaces

3.2.1 General

The general interface is the very first page that shows all types of roles/users including admin before they get into their account. There are 2 features which are login (Figure 4) and registering for a new account (Figure 5). Register function only for new customers only meanwhile registering for new businesses can only be done by admin.

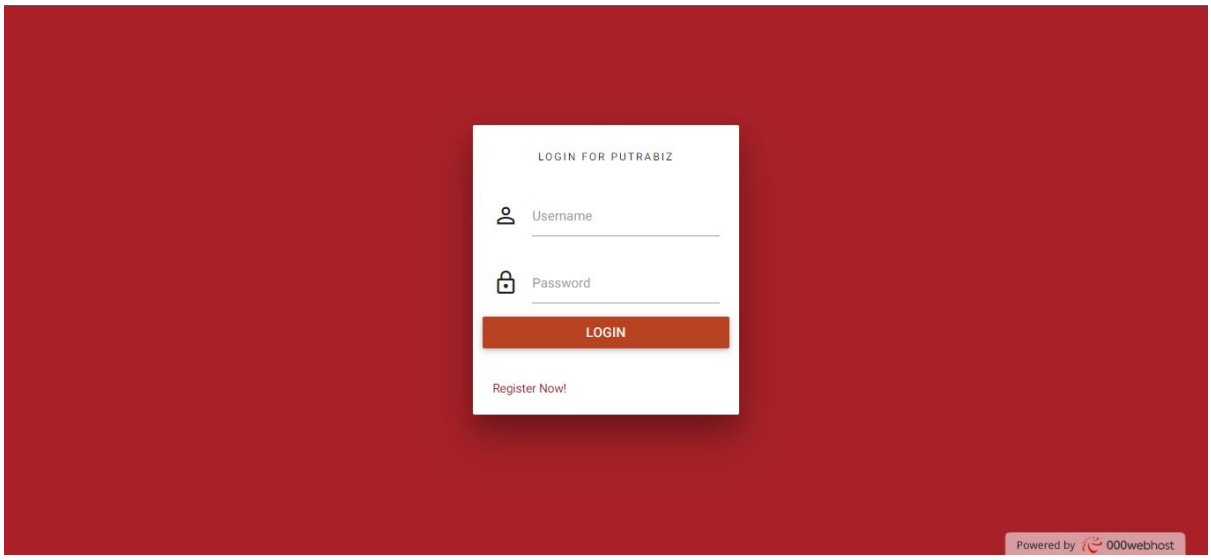

Figure 4: The log in page of PutraBiz

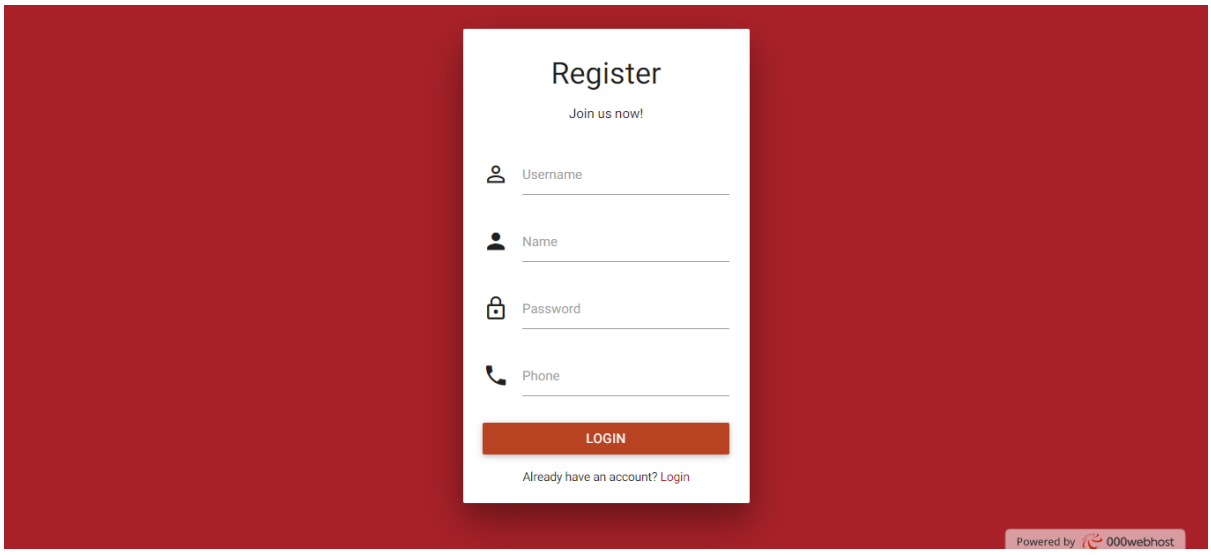

Figure 5: The registration page of PutraBiz

3.2.2 Admin Interface

Admin is responsible for administration in managing web user's data including customer and business order. For instance, the roles of admin frequently interact with end users. If any organizational/business owner or user information has issues during update, admin needs to respond with appropriate changes as shown in Figure 6 and 7. In addition, if there's any new business owner who wants to start a business in UPM Serdang Area, admin can register for their business account after they contact and fill up required information such in figure 8.

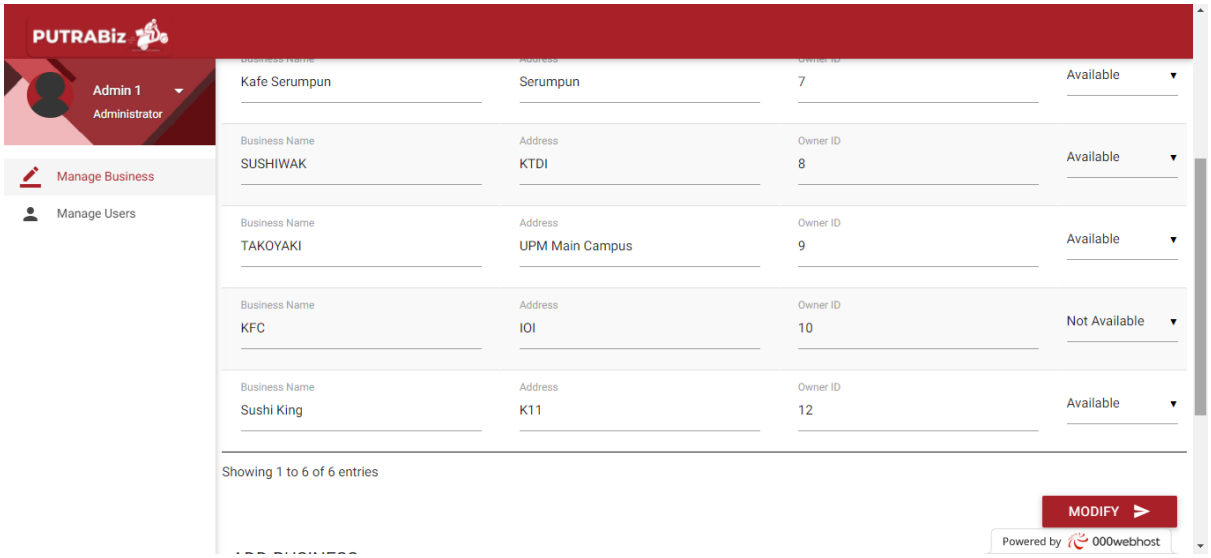

Figure 6: 'Manage Business' dashboard for administrator with list of businesses and their details

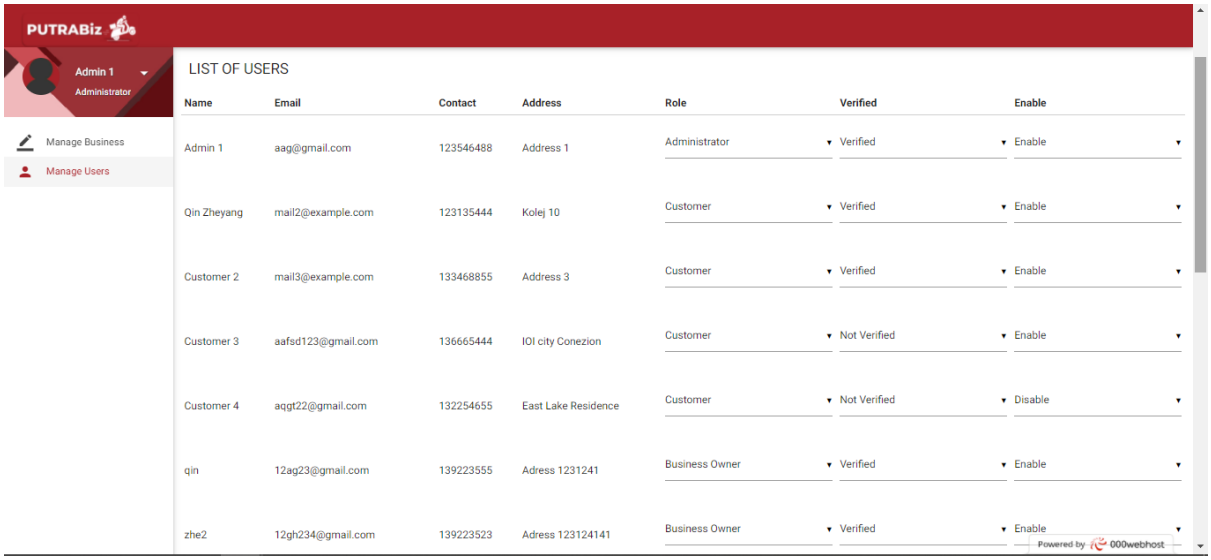

Figure 7: 'Manage Users' dashboard for administrator with list of users and their details

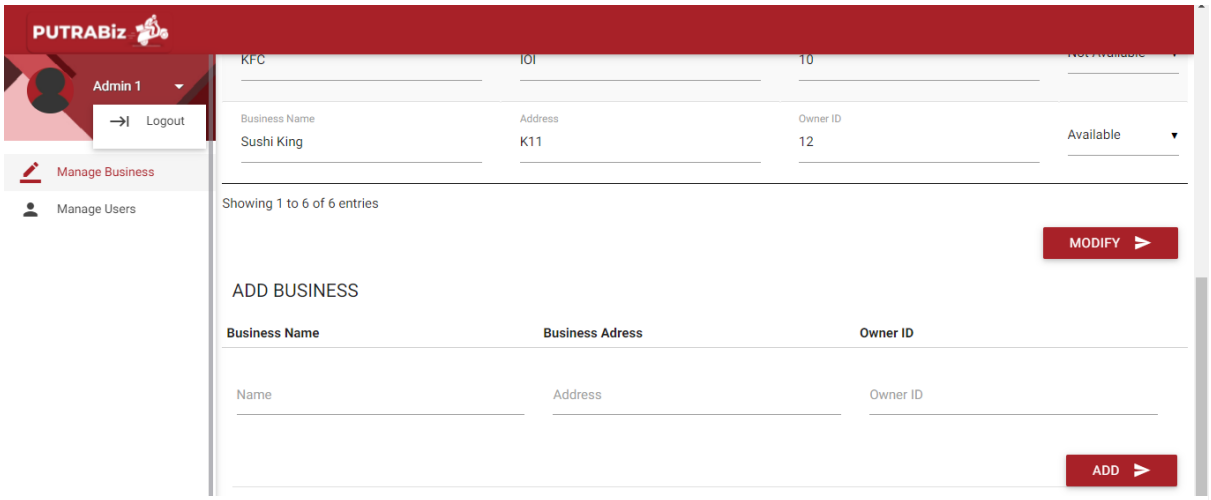

Figure 8: Administrator can add new businesses' details including their name, address, and owner ID

3.2.3 Customer Interface

Customers are the main user for this web application. In contrast with business owner and admin site, a customer did not have an authority to edit the menu displayed in the website.A customer can only order items from the website and it will be delivered to them. A customer can choose items based on different business name and cafeterias around UPM area. Afte choosing the items, a customer can decide the quantity of their picked items. The payment of the items were divided into two method. First, by cash on delivery where the customer can pay their items to the runner. Second, by online banking (wallet). Upon confirmation of their order, the website will display the order informations placed by the customer for them to check their items. After placing th orders, customer can check the status of the order, provide review of the order and see the order history. Finally, a customer can update their order details such as username and address in user details interface.

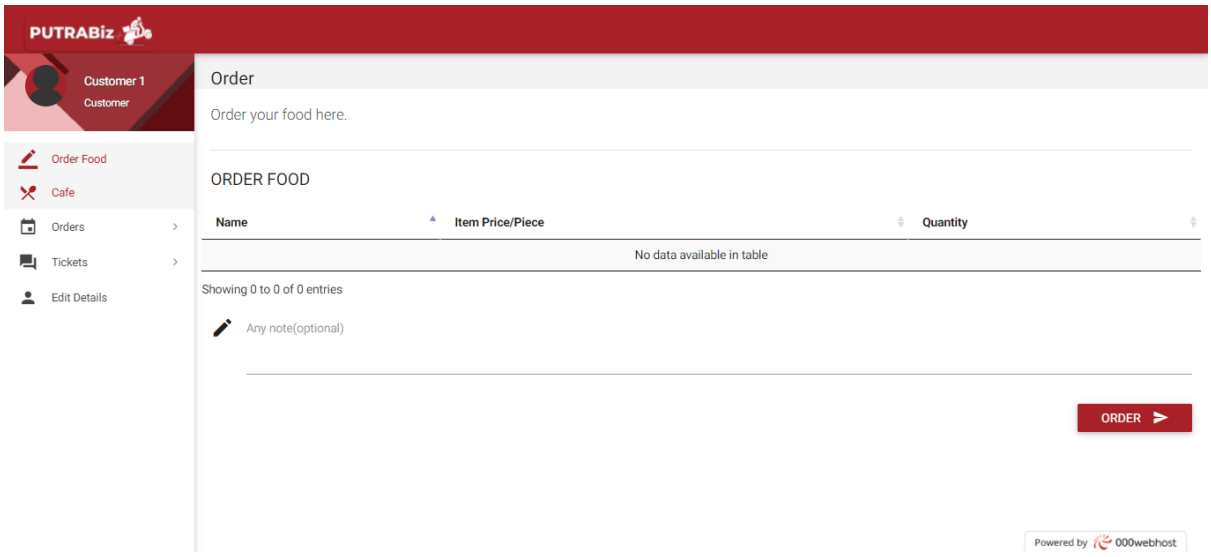

Figure 9: 'Order Food' dashboard, where a customer can pick and choose items

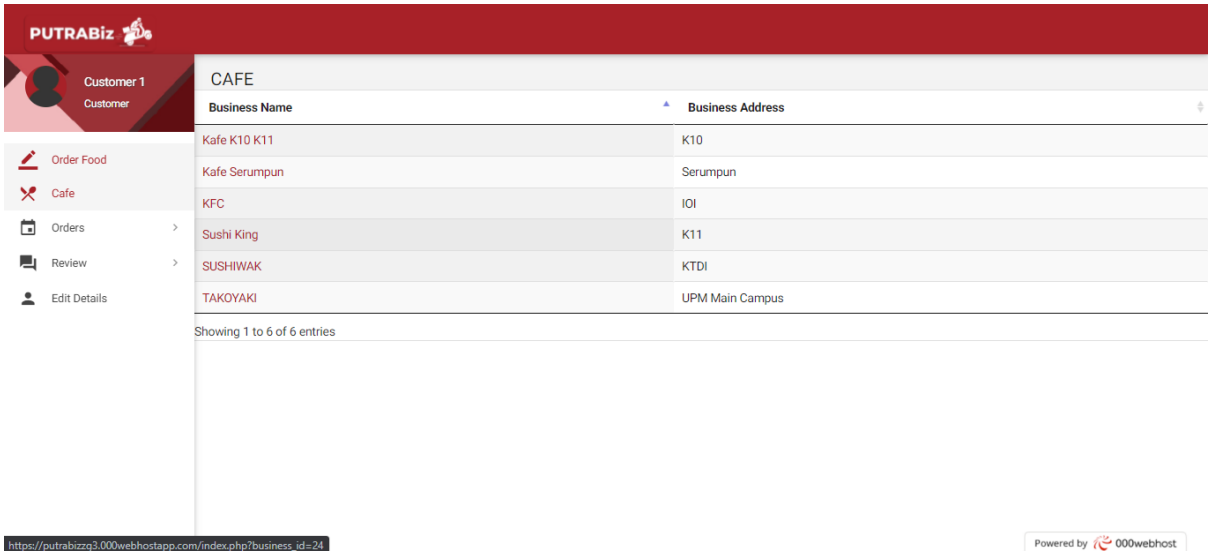

Figure 10: List of cafeterias around UPM for a customer to choose from

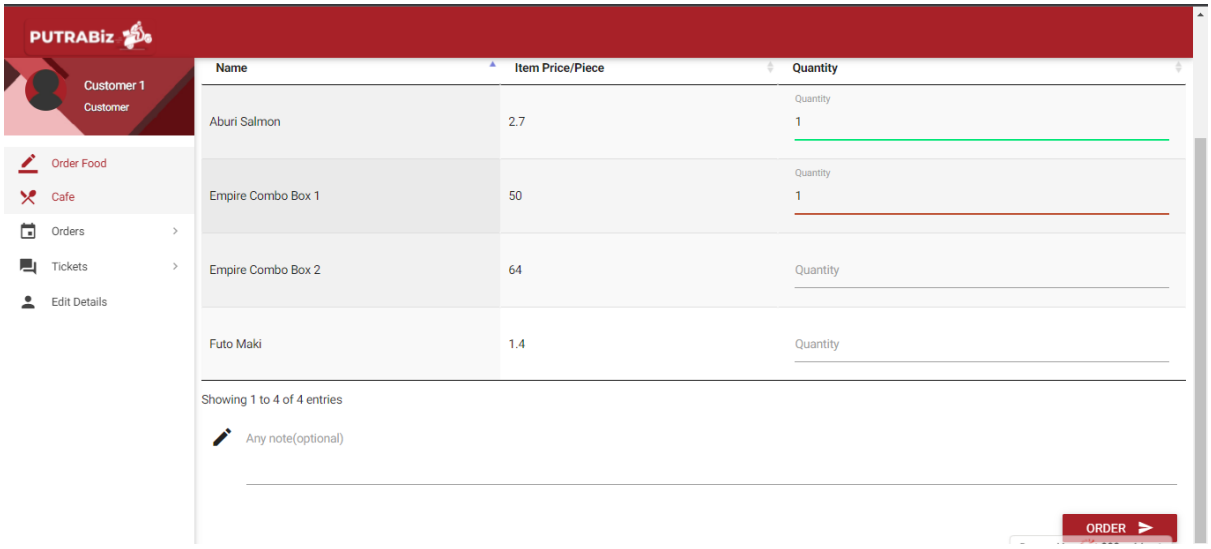

Figure 11: The list of items offered by a café where a customer can insert quantity to confirm order

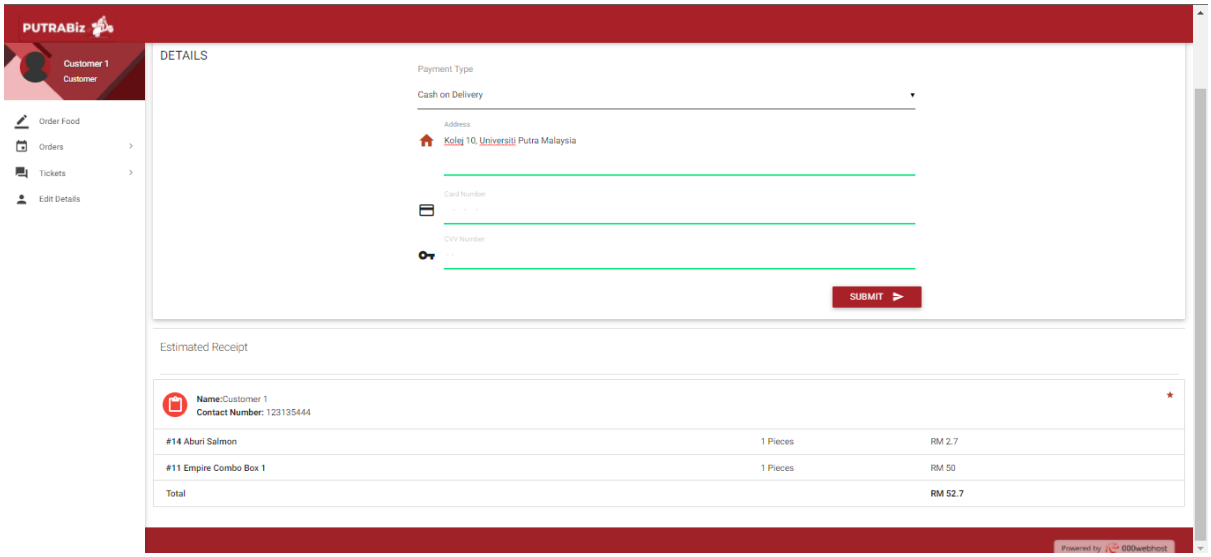

Figure 12: payment of the order using cash on delivery

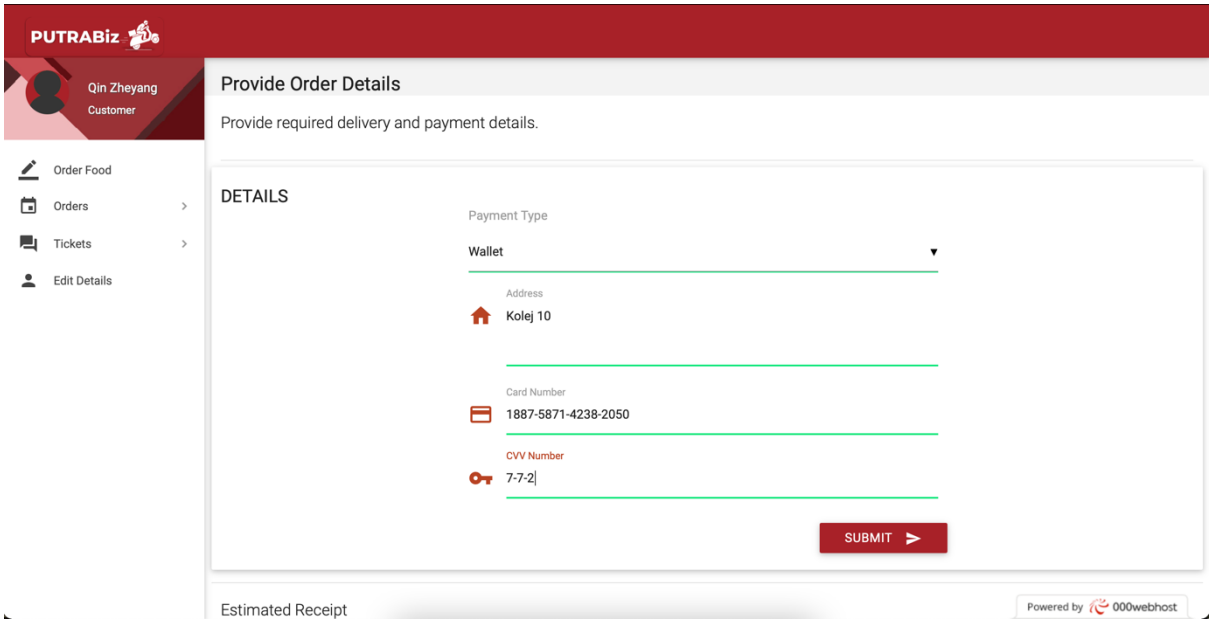

Figure 13: payment of the order using wallet

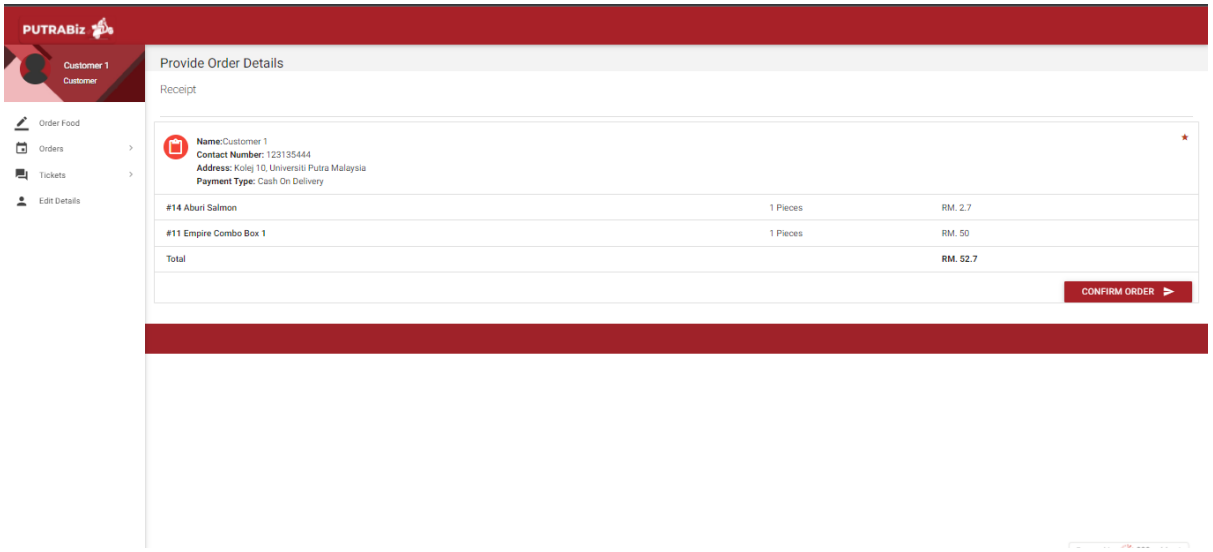

Figure 14: Upon confirmation, the customer is displayed the order information to double-check

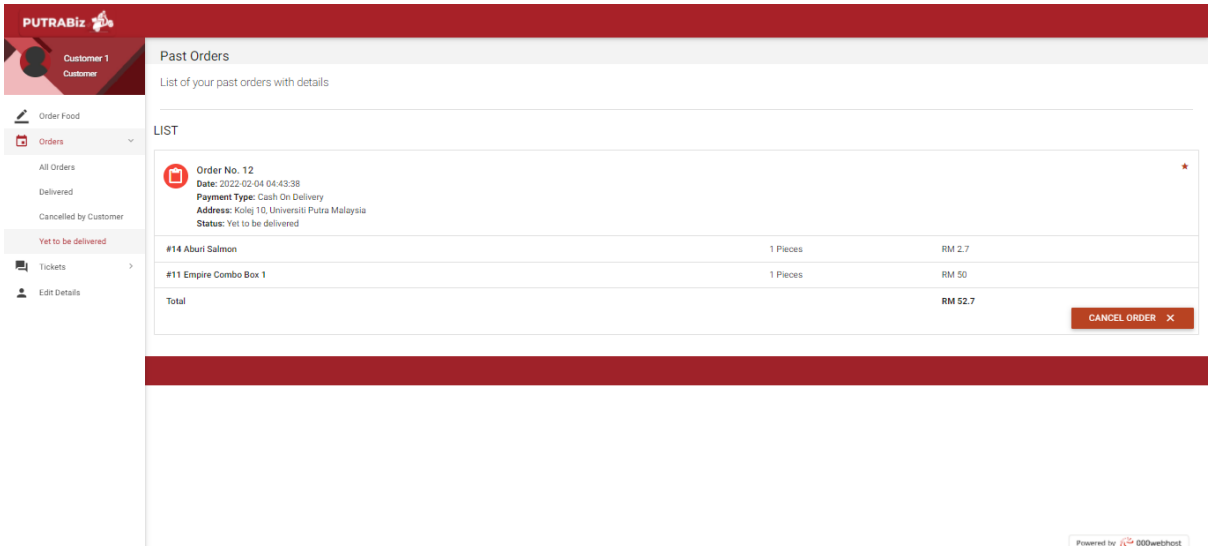

Figure 15: A customer can check the status of the order and also given the opportunity to cancel order

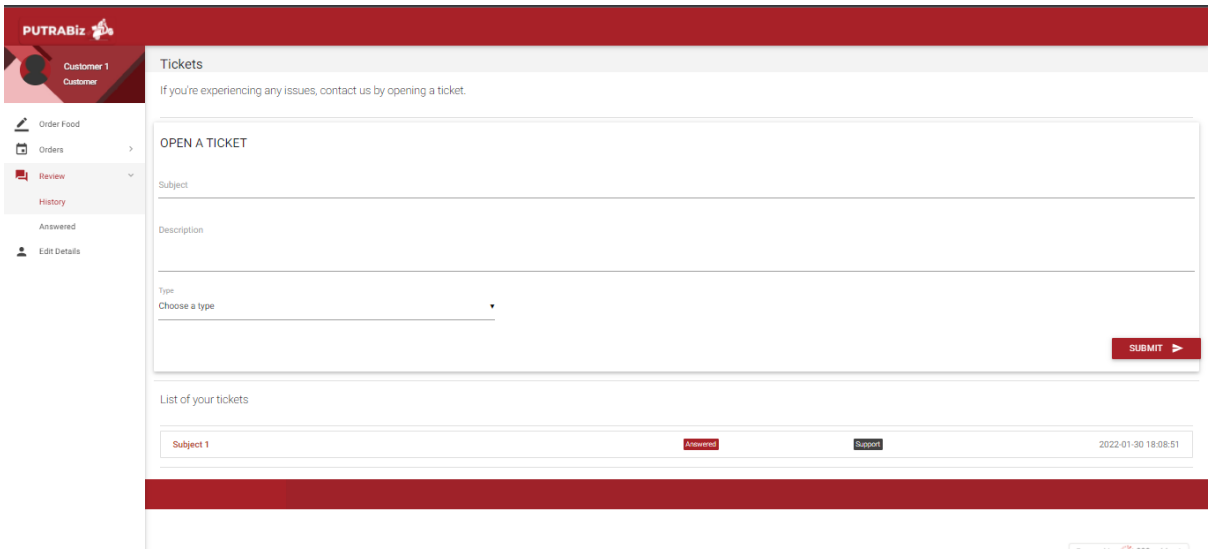

Figure 16: Under 'Review', a customer can give a review of any order that has been made

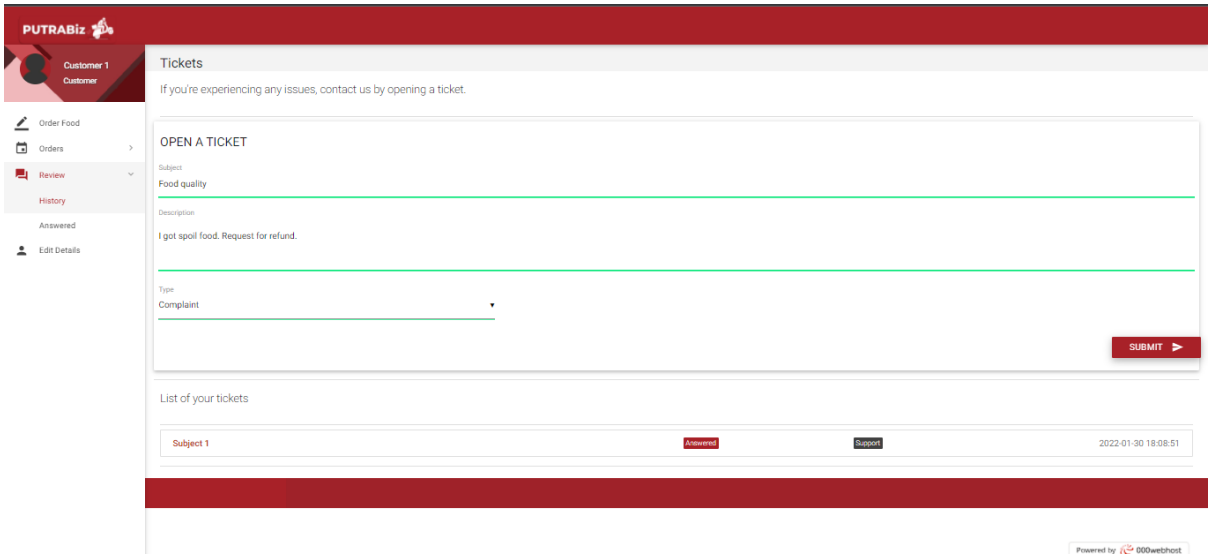

Figure 17: A customer can also search order history

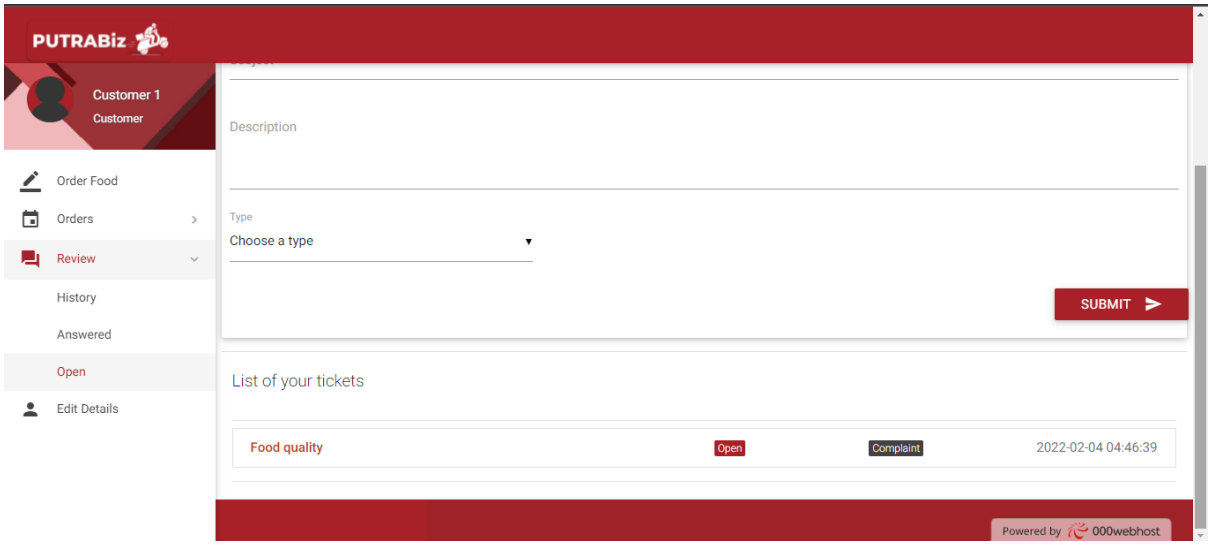

Figure 18: Customer can submit any complaint or problem that they've experienced.

Figure 19: 'Edit Details' dashboard where a customer may manage their details.

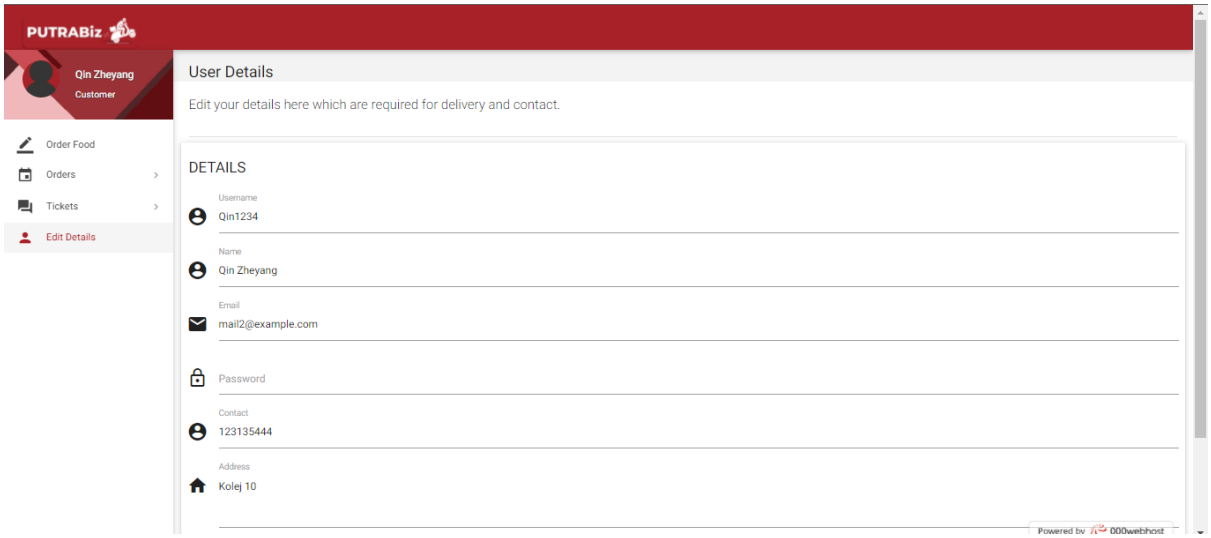

Figure 20: A complete update of customer details

3.2.4 Business Interface

In the business interface, a business owner can be registered into the website by admin. A registered business owner has controls over the item they want to sell. Once a customer has made an order, the business owner can see all orders placed by different customers inside all orders options display. A business owner can also update the order status placed by a customer. Having a business needs the owner to allocate a runner for delivery. Therefore, a business owner can manage their runner by adding, deleting, and managing their runner details. The finished order by a customer will leave a ticket and review the items sold by the customer. Hence, in customers reviews webpage, a business owner can view the tickets and reviews leave by the customers.

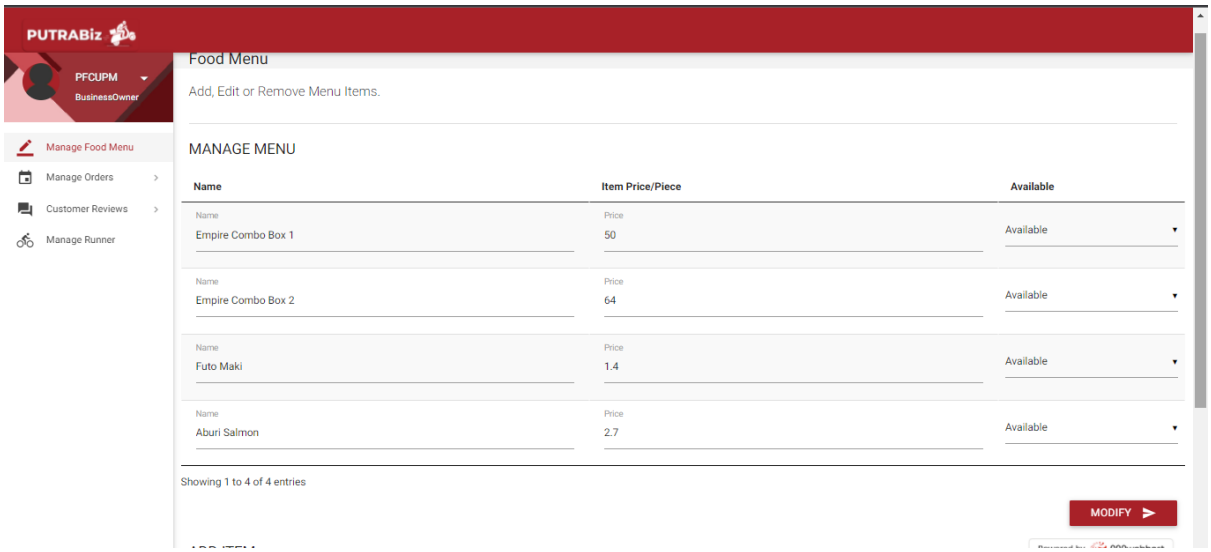

Figure 21: 'Manage Food Menu' where a business owner may edit and manage their menu

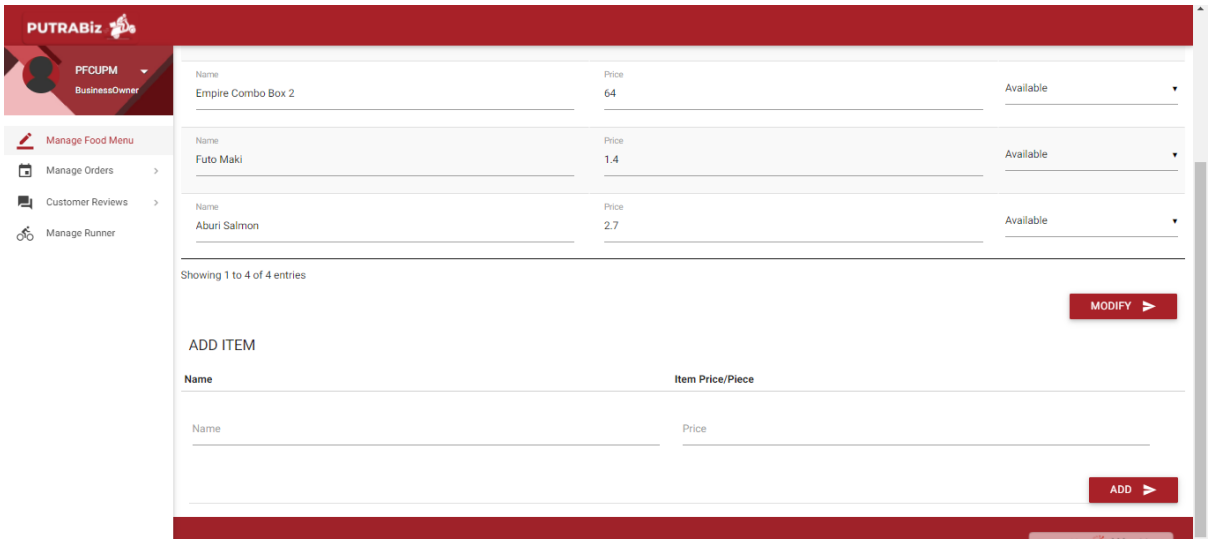

Figure 22: An owner can also add item on the same page

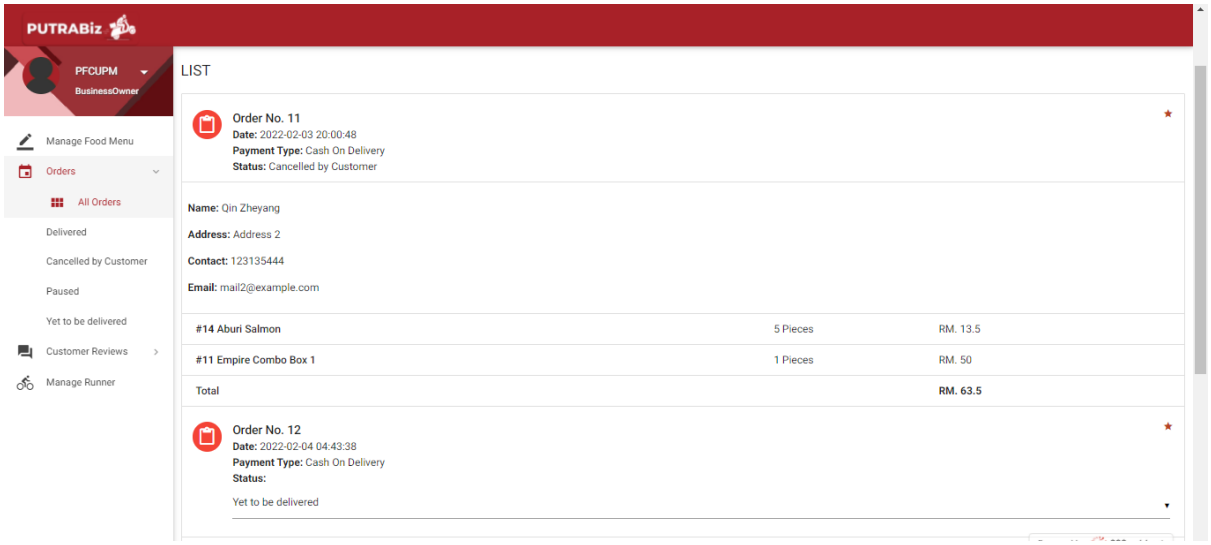

Figure 23: 'All Orders' option displays to the owner a list of orders made by customers

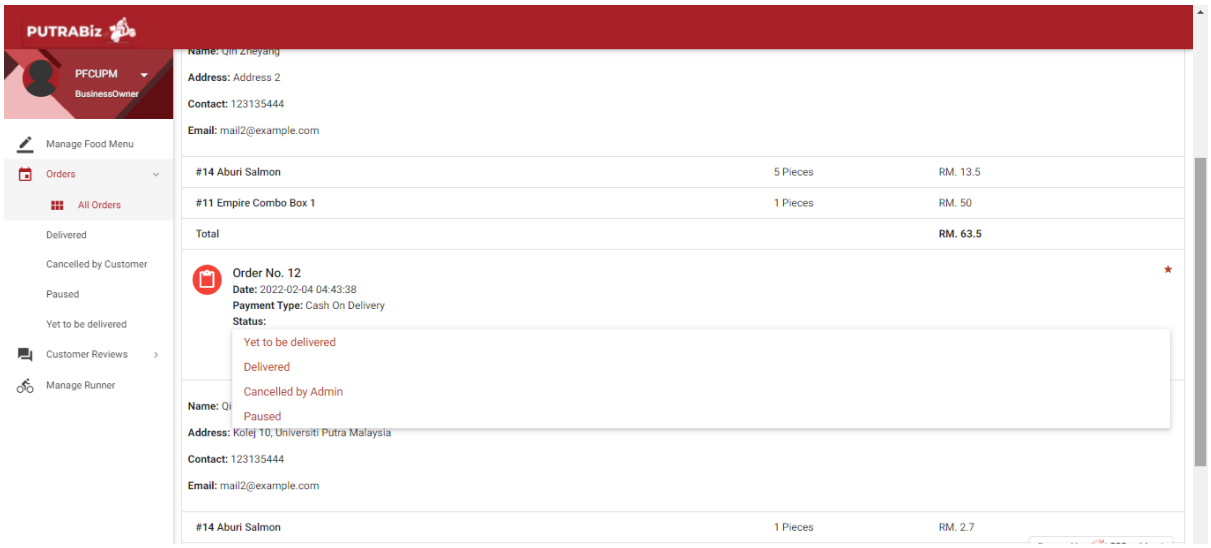

Figure 24: Status of the order placed by a customer to business owner

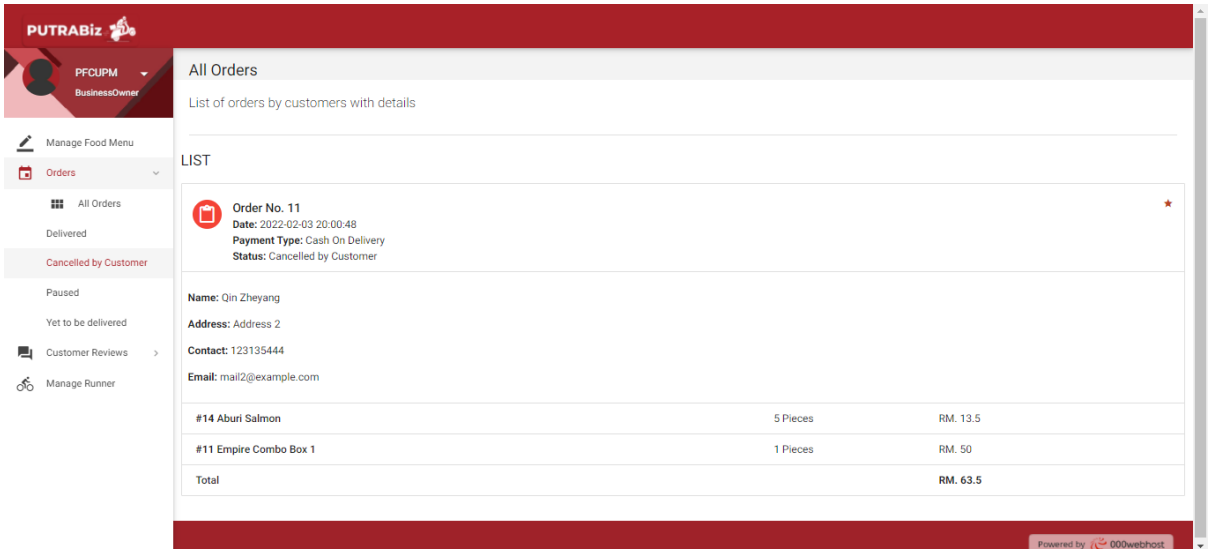

Figure 25: Owners may also check on orders cancelled by customers through the 'Cancelled by Customer' option

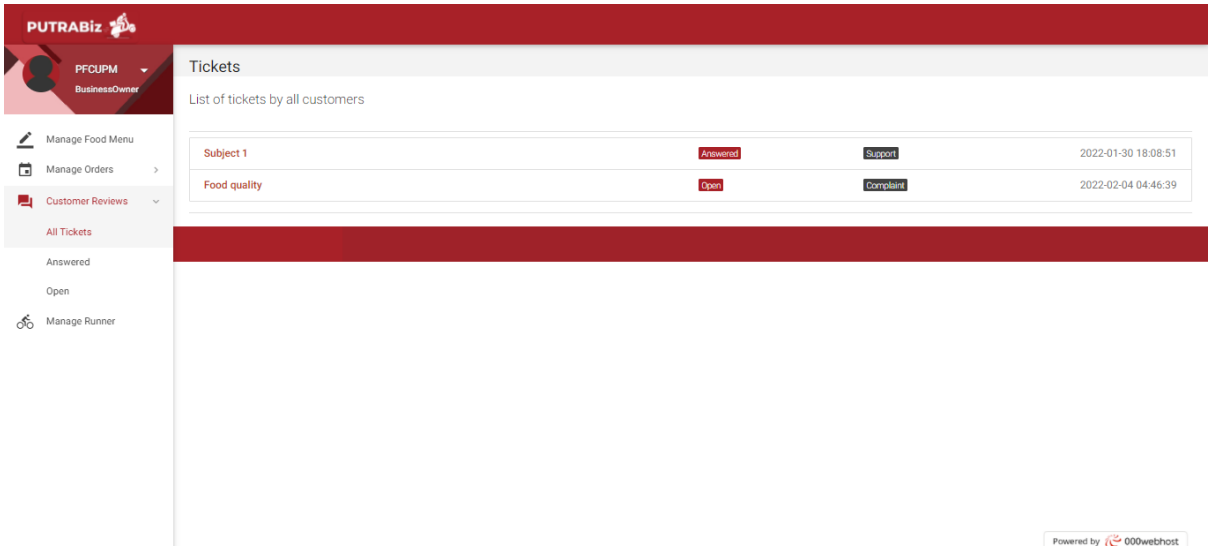

Figure 26: In 'Customer Reviews', an owner may view customer's tickets and reviews

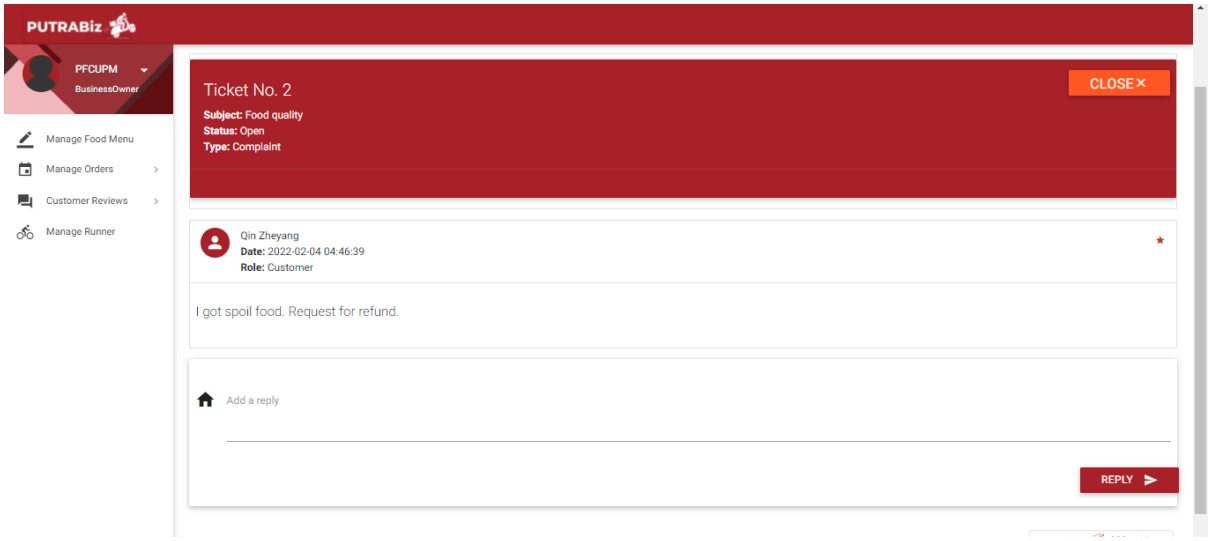

Figure 27: An example of a review by a customer

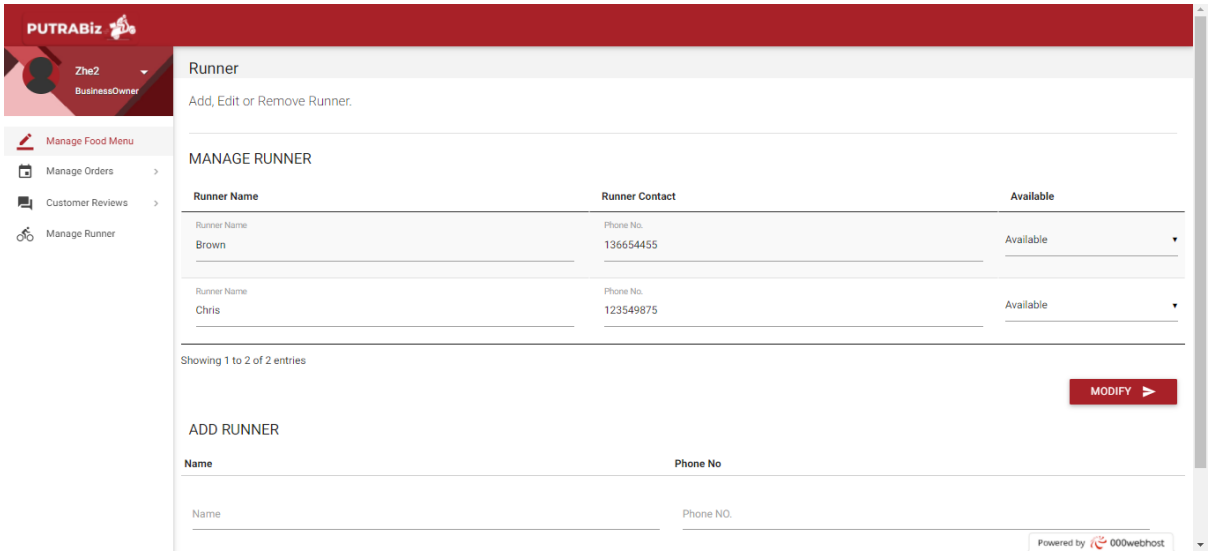

Figure 28: 'Manage runner' allows an owner to add, delete or manage details of their runners

3.3 Tools

- PHP, HTML, CSS
  - These technologies are used to build the system. PHP and HTML are used to build the interface of the system and build the functionality of the system. CSS is used to define styles of the system.
- XAMMP
  - XAMPP is a free and open-source cross-platform web server solution stack package. This software is used to connect to Apache and MySQL.
- phpMyAdmin

- phpMyAdmin is an open source and free administration tool for MySQL. This tool is used to insert the database.

- 000webhost
  - 000WebHost is a hosting provider that offers reason web hosting services free of charge. After completing build up the PutraBiz web, it will publish here for testing purposes.
- Lucid
  - Lucid chart is a visual workspace that blends diagramming, data visualisation, and collaboration to help users get a better understanding of complex concepts and promote creativity. Entity relationship diagrams (ERDs) assist a developer in comprehending the connections between various entities inside a system, such as customers, items, and order IDs.

4.0 Results and Discussion

The system's implementation will begin after the finishing of the system's design. The database structure will be established initially during the development phase. The server and client sides were then developed to facilitate communication between customers and business owners. During the testing phase, a limited number of test cases are run to validate the system. This ensures the system's feasibility, usability, and compatibility.

Unit Testing: Login

Test Objective: To ensure different types of roles/users able to login into specific account with valid name and password.

Table 1 Login result

Input	Expected Output	Actual Output
Login by entering correct customer's username and password.	The system let the customer login.	Login successful and enter customer view interface.
Login by entering correct business owner's username and password.	The system let the owner login.	Login successfully and enter business owner view interface.
Login by entering correct admin's username and password.	The system let the admin login.	Login successful and enter admin view interface and manage customer and owner user information.
Login using deleted username and password.	The system won't let the customer/owner login.	Login unsuccessful. The account is permanently deleted and won't get access to the account.

Unit Testing 2: Add and update menu

Test Objective: To ensure the business owner able to add new menu into the system.

Table 2 Add and Update menu result.

Input	Expected Output	Actual Output
Enter all the new information of the food	The food information is stored into the database.	The food information is stored into the database and the user can view the food in the list
Enter new name/price to update current menu's name/price	The menu's name change.	The new name/price for selected menu is updated and stored into database. The user can view the update information regarding the menu.

Unit Testing 3: Update information customer

Test Objective: To ensure the customer able to update their info by themself into the system.

Table 3 Update information customer

Input	Expected Output	Actual Output
Enter all the new information of the food	The food information is stored into the database.	The food information is stored into the database and the user can view the food in the list

Unit Testing 4: Order Food

Test Objective: To ensure the customer able to order the food.

Table 4 Order Menu result

Input	Expected Output	Actual Output
Enter the information of the quantity for order menu using unverified account.	The order does not process successfully.	Cannot add any menu and checkout.
Enter the information of the quantity that customer want.	The order is proceeded for confirmation.	The customer is allowed to confirm the order.
Choose payment method, enter the information of address and card (if use)	The order is processed successfully.	The customer is allowed to make the order.
Not choose payment method, enter the information of address and card (if use)	The order does not process successfully.	The customer is not allowed to make the order.
Choose card as payment method, enter the information of address and not fulfil card information.	The order does not process successfully.	The customer is not allowed to make the order.
Not choose payment method, not enter the information of address and card (if use)	The order does not process successfully.	The customer is not allowed to make the order.
Click Order button without entering any information	The order does not process successfully.	The customer is not allowed to make the order.

Unit Testing 5: Add new business owner

Objective: To ensure the admin able to add new business into the system.

Table 5 Add new business

Input	Expected Output	Actual Output
Enter all the information of business owner.	The owner information is stored into the database.	The owner information is stored into the database and the admin can view and manage in manage business feature.

Unit Testing 6: Update user information

Objective: To ensure the admin able to update customer and business owner information and their availability of owner on business hour.

Table 6 Update user information

Input	Expected Output	Actual Output
Enter all the new information of business owner.	The new owner information is stored into the database and replace the previous.	The owner information is stored into the database and the latest information can view after the update.
Click modify button without entering any information	The update does not process.	There's no update information.

5.0 Conclusion

PutraBiz is an online food delivery website that provides an efficient service that comes with reasonable and affordable prices for students of Universiti Putra Malaysia (UPM). This service may decrease cases of food insecurities among UPM students since the vendors involved in this website are considered cheap and suitable for students. Specifically, cafeterias around the UPM campus such as Putra Food Court (PFC), and additionally small businesses that are local to UPM.

The main phases of the development are the making of Entity-Relationship (ER) diagrams, creating the database based on the ER diagrams, and coding. Coding involved the configurations of the database and the connection of the website to the data in the database in PHP (scripting language). In addition, the interactive design of the website is also coded but in Hypertext Markup Language (HTML), JavaScript, and Cascading Style Sheets (CSS).

In the developmental phase of the website, there were challenges faced in each phase. For instance, during the making or ER diagrams, complications came when deciding primary keys and foreign keys of each table. After deeply understanding the relationship between the tables, the problem was quickly phased out. Furthermore, complications soon again started when integrating the files and pages of different coding, and different references to the database. A few individual files had to be edited to suit the integration. there were more than two complications but the two mentioned above were the highlights.

In summary, the development and testing of the website were considered successful because all were functional. Adding data, editing data, and updating data in the database were favourable outcomes. Matching the data with user inputs was also achieved. Despite the complications, the features of the website were still functional. Overall, the objectives were achieved. PutraBiz is still up and running and one can access with the following link below:

https://putrabizzg3.000webhostapp.com/

6.0 References

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