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Chop Joo Huat Grocery Ordering System

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Abstract

Chop Joo Huat Grocery Store is a grocery store with traditional sales and purchasing processes. The existing processes for recording customer orders and maintaining financial sales records are manual, error prone and time consuming. The objectives of this project are to design a grocery ordering system using an object-oriented approach, to develop a grocery ordering system using a web-based approach, and to test the functionality and usability of the developed grocery ordering system. The web-based grocery ordering system consists of eight modules including register, login, manage account details, manage groceries, manage order, manage payment, manage feedback, and generate report.The project used an iterative model of the software development life cycle to develop the system. At the end of the project, the grocery ordering system was successfully developed, and the reliability of the system was proved through testing, which indicated that the system met the user requirements.

1. Introduction

A grocery ordering system is an e-commerce platform or application that allows customers to browse, select and purchase groceries online [1]. Grocery also calls grocery store that sells non-perishable food items and certain non-edible household items. For this project, a grocery store called Chop Joo Huat, which sells a variety of groceries to its customers, is located at Kampung Tebing Rabak, Lumut, Perak. This grocery store is still using the traditional business process of sales and purchasing. The existing processes of recording customer orders and maintaining financial records are manual, error-prone, and time-consuming [2]. However, e-commerce is growing exponentially today, putting pressure on traditional brick-and-mortar stores, and is expected to grow even more in the future [3].

The objectives of the project are to design a grocery ordering system using an object-oriented approach, develop a grocery ordering system using a web-based approach, and test the functionality and usability of the developed grocery ordering system. The target users of the system include administrators (store owner) and customers. The developed system consists of modules such as managing groceries, managing orders, managing payments, managing feedback, and generating reports. The ordering system utilizes new technologies to create a link between the business and its customers, helping the business to gain competitiveness while improving operational efficiency and customer experience [4].

2. Related Work

This section provides a comprehensive overview and analysis of existing grocery ordering systems. It also provides background information and context for this project and helps to understand the current state of knowledge in the field through comparison.

2.1 Grocery Ordering System

Grocery ordering system is a form of e-commerce that is currently growing in popularity due to the relative convenience it offers to the consumers. The era of smartphones and the Internet has created numerous opportunities for businesses to increase their online sales [1]. It is considered as a way of doing business that offers relative convenience to the customers because they can purchase the required groceries from the comfort of their homes or offices, depending on their schedules [5]. Coronavirus disease 2019 (Covid-19) pandemic has forced people to limit their physical interactions, which has led to an explosion in online grocery shopping [6]. A grocery ordering system is a digital platform that allows the consumer to browse, select, and purchase desired groceries on the Internet through a web browser on an electronic device such as a smartphone [1]. The ordering process is more streamlined compared to the traditional sales process. Since customers can view the various categories of groceries, if they want to purchase groceries through the system, they can view the details of the groceries and purchase them in just a few clicks.

2.2 Grocery Ordering System

For the development of the grocery ordering system, a comparative study of three relevant existing grocery ordering systems was conducted. The existing grocery ordering systems discussed include Jocom, MyGroser, and Potboy. Table 1 shows a comparison of the three existing systems with the proposed system.

Table 1 *Comparison of Existing System with Proposed System*

Features	Jocom	MyGroser	Potboy	Chop Joo Huat Grocery Ordering System
System Type	Web-based, Android based, and iOS based	Web-based, Android based, and iOS based	Web-based, Android based, and iOS based	Web-based
Register	✓	✓	✓	✓
Login	✓	✓	✓	✓
Manage Account Details	✓	✓	✓	✓
Manage Groceries	✓	✓	✓	✓
Manage Order	✓	✓	✓	✓
Manage Payment	✓	✓	✓	✓
Manage Feedback	X	X	X	✓
Generate Report	X	✓	✓	✓

Table 1 compares the three selected existing systems: Jocom, MyGroser, and Potboy, with the proposed system, Chop Joo Huat Grocery Ordering System. This comparison table details the key characteristics and functionalities of the developing system to paint a clear picture of how it contrasts with these existing systems. Functionalities compared include the platform used, register, login, manage account details, manage groceries, manage order, manage payment, manage feedback, and generate reports modules. A comparison of the existing and proposed systems shows that several of the modules of the proposed system are the same as those of the existing system. However, there are some differences between the systems studied. The shortcomings of the existing systems are that most of them do not provide a manage-feedback module, and some do not provide a generate report module for the administrator.

3. Methodology

Methodology is also referred to as an analysis of the principles or procedures of inquiry in a particular field. The main purpose of selecting a methodology is to facilitate and improve the productivity and workflow of an organization, especially for large projects. The Software Development Life Cycle (SDLC) is a structured and systematic approach that includes a detailed plan of how to develop, modify and maintain a software system within a specified time frame [7]. For this project, an Iterative Model was selected and discussed.

3.1 Iterative Model

According to Figure 1, the iterative model includes planning, requirements gathering and analysis, design, implementation, testing, evaluation, and deployment phases. The iterative model is an incremental software

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development process that divides the project into smaller sections or iterations. Each iteration builds on the previous iteration and covers the entire software development cycle from the planning phase all the way to the deployment phase [8]. As this paradigm permits flexibility and modification during the development process, it is especially well-suited for projects with changing requirements. As shown in Table 2, each phase has its own activities and work products to be carried out throughout the project development process.

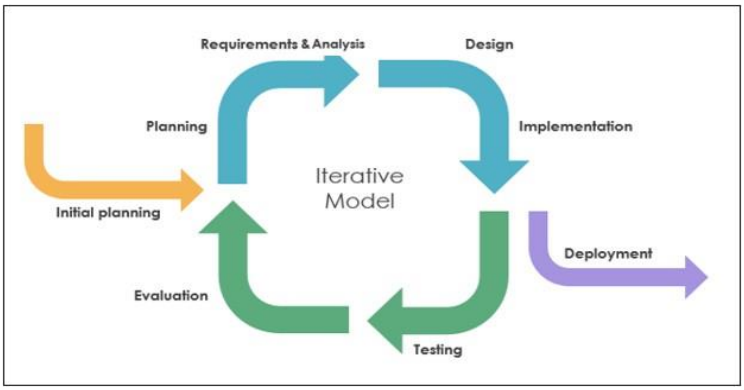

Fig. 1 *Iterative model*

Table 2 *System Development Activities and Task*

Phase	Task/Activities	Work Product	Tool
Planning	Identify current business method and problems with current operations	Proposal and Gantt Chart	WhatsApp (Discussion)
Requirement gathering and Analysis	Interview session, collect and document requirements	Software Requirement Specification	-
	Iterative Start		
Design	Design UML diagrams, system database, and user interfaces	Software Design Document	Draw.io and Figma
Implementation	Develop system modules and database integration	Eight modules and system database	Visual Studio Code, XAMPP and PhpMyAdmin
Testing	System testing and fix system bugs	Test cases and test report	-
Evaluation	System validation	User evaluation	-
	Iterative End		
Deployment	System deliverables	-	Live server

4. Result and Discussion

The system analysis process will explain the system requirement involved in the Chop Joo Huat Grocery Ordering System and the system design process will also explain the functionality of the system more clearly. The system design includes database design and interface design regarding the developed system.

4.1 System Requirements Analysis

Requirements analysis is a process undertaken to determine the expectations of users and stakeholders for a developed system [9]. Requirements analysis, such as functional and non-functional requirements analysis, is conducted to gain a clearer and more systematic understanding of how the system should work and to measure its quality. Tables 3 and 4 describe the functional and non-functional requirements of the developed system.

Table 3 *Functional Requirements*

Module	Functionalities
Register	• The system should allow new customers to register for an account.

Table 3 *(cont)*

	• The system should alert customer to any invalid inputs or detected empty fields.
Login	• The system should allow users to log in with an e-mail and password. • The system should alert the user to any invalid input or detected empty fields. • The system should redirect the user to the appropriate main page after a successful login.
Manage Account Details	• The system should allow the user to change their account password. • The system should allow the user to update their profile details.
Manage Groceries	• The system should allow the administrator to add, update, and delete grocery categories and grocery items. • The system should allow administrator to view grocery categories and grocery items.
Manage Order	• The system should the customer to add grocery items to the shopping cart. • The system should allow the customer to edit quantities and delete groceryitems from the shopping cart. • The system should allow the customer to view the shopping cart. • The system should allow administrator to view order details and update order status.
Manage Payment	• The system should allow the customer to check out shopping cart items. • The system should allow the customer to choose their preferred payment method. • The system should clear and empty the customer's shopping cart after successful payment.
Manage Feedback	• The system should allow the customer to add and update their feedback. • The system should allow the administrator to view and respond to the customer's feedback.
Generate Report	• The system should allow the administrator to enter a start date and an end date to generate sales reports. • The system should allow the administrator to view and print the sales report.

Table 4 *Non-Functional Requirements*

Requirement	Description
Operational	• The system should be able to operate on any web browser.
Performance	• The system should be readily accessible. • The operation time and response time of the system should be within an acceptable time.
Security	• The system should only be accessed by authenticated users with the correct email and password.
Usability	• The overall appearance and flow of the system should be easy for users to understand.
Integrity	• The password stored in the database should be encrypted.

4.2 Use Case Diagram

A use case diagram is one of the Unified Modelling Language (UML) diagrams used in software engineering that graphically depicts the interaction between a system and its external entities, known as actors. UML offers a visual way to represent and communicate complex systems and their structure, behavior, and interactions [10]. Use case diagrams are a useful tool for outlining a system's features or functionality from the perspective of the user. As shown in figure 2, the developed system implements a total of eight modules with two actors, the administrator, and the customer. These modules include register, login, manage account details, manage groceries, manage order, manage payment, manage feedback, and generate report.

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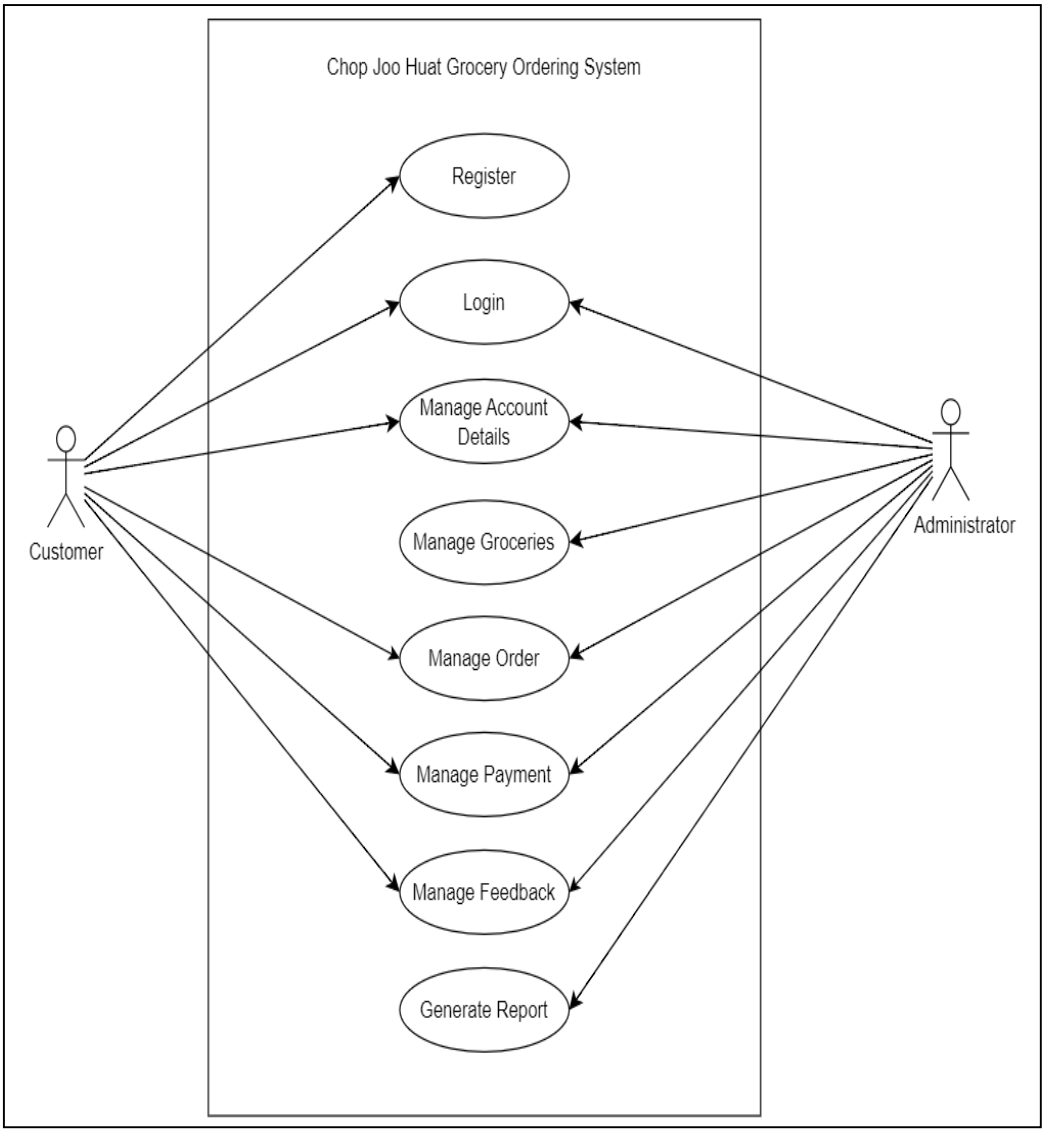

Fig. 2 *Use Case Diagram*

4.3 Class Diagram

Figure 3 illustrates the class diagram of the developed system. There are 10 which are tbladmin, tblcompany, tblcategory, tblproducts, tblcart, tblorder, tblcustomer, tblcustomer_temp, wishlist, and tblreviews.

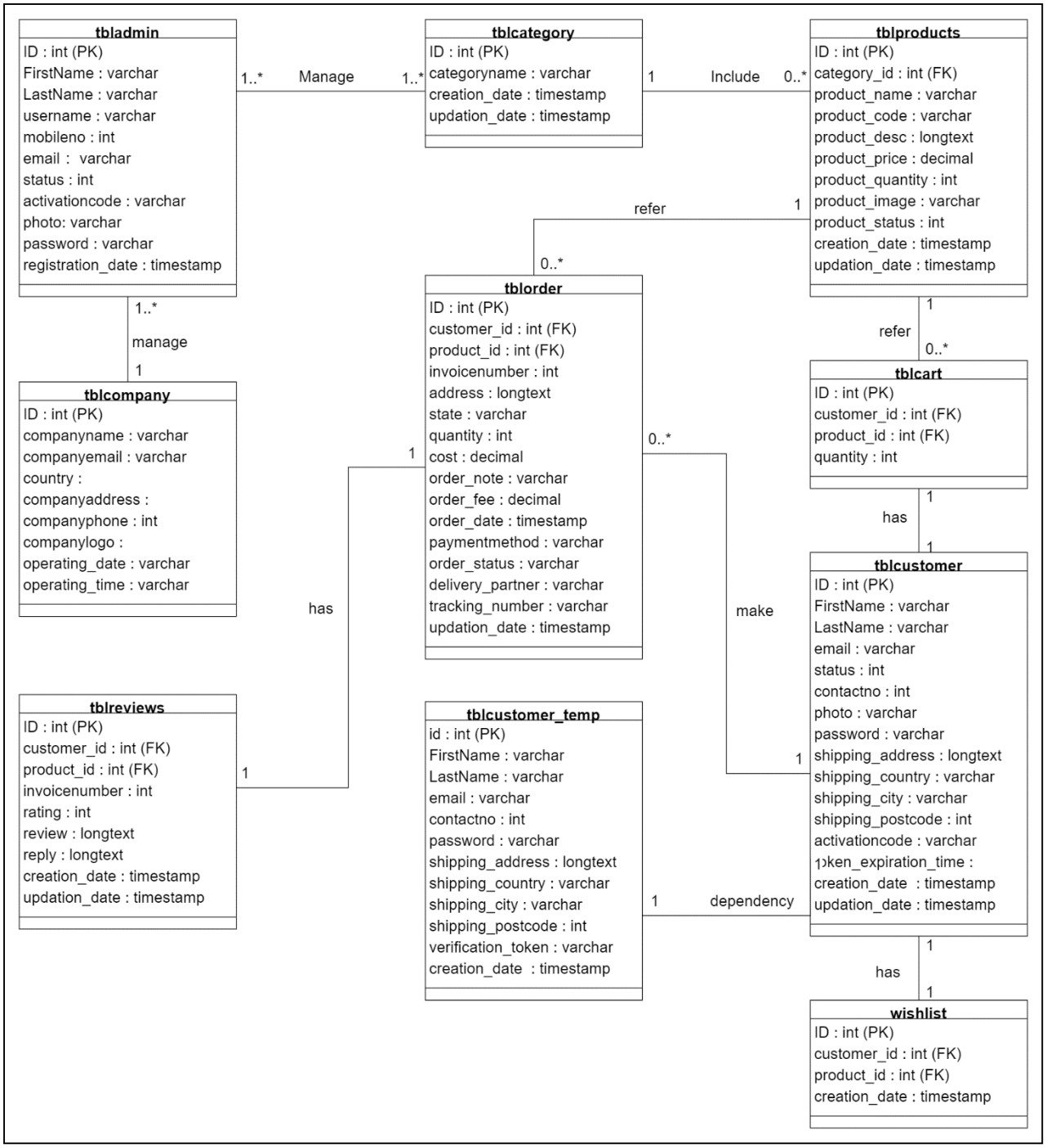

Fig. 3 *Class Diagram*

4.4 Implementation

Chop Joo Huat grocery ordering system is developed using HTML, CSS, JavaScript and PHP programming languages. The software applications used were Visual Studio Code and XAMPP. The XAMPP software executes SQL statements and connects the user interface with the database to store data.

4.4.1 Register Module

Figure 4 shows the registration user interface. To register an account, new customers need to enter details such as name, password, address and contact number. After that, they need to click on the "Register" button and then the system will send a verification email to the email address entered by the customer and after successful verification, the customer has successfully created their account.

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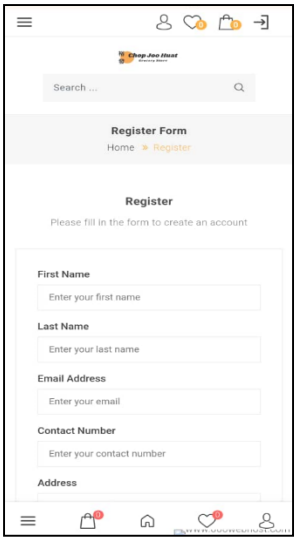
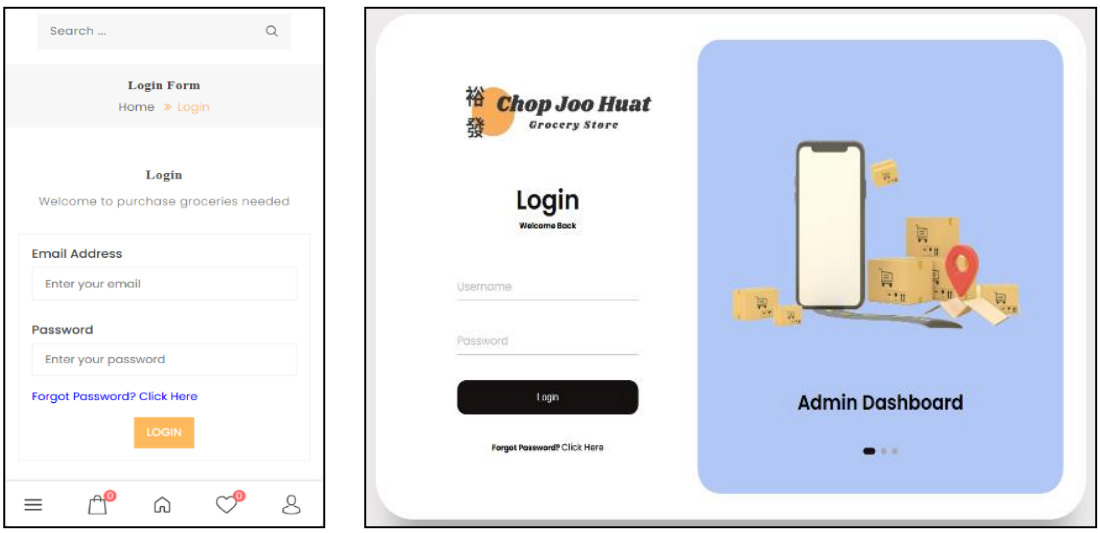


Fig. 4 *Resgistration account Interface*

4.4.2 Login Module

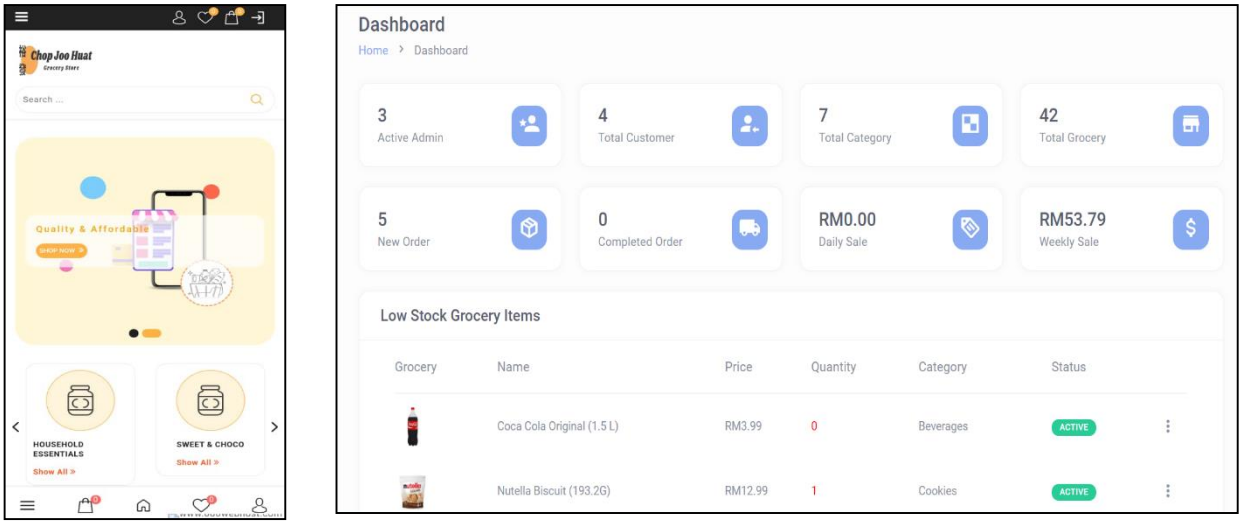
Figure 5 shows the customer login interface and the administrator login interface respectively. Both users are required to enter the valid e-mail address and password to log in to the system. If they forgot password, they could click the "Forgot Password" link for getting reset password email so they can click the link in the email to reset password.



(a) **(b)**

Fig. 5 *Login interface of (a) Customer; (b) Administrator*

Figure 6 shows the main page after the customer and administrator have successfully logged in to the system.

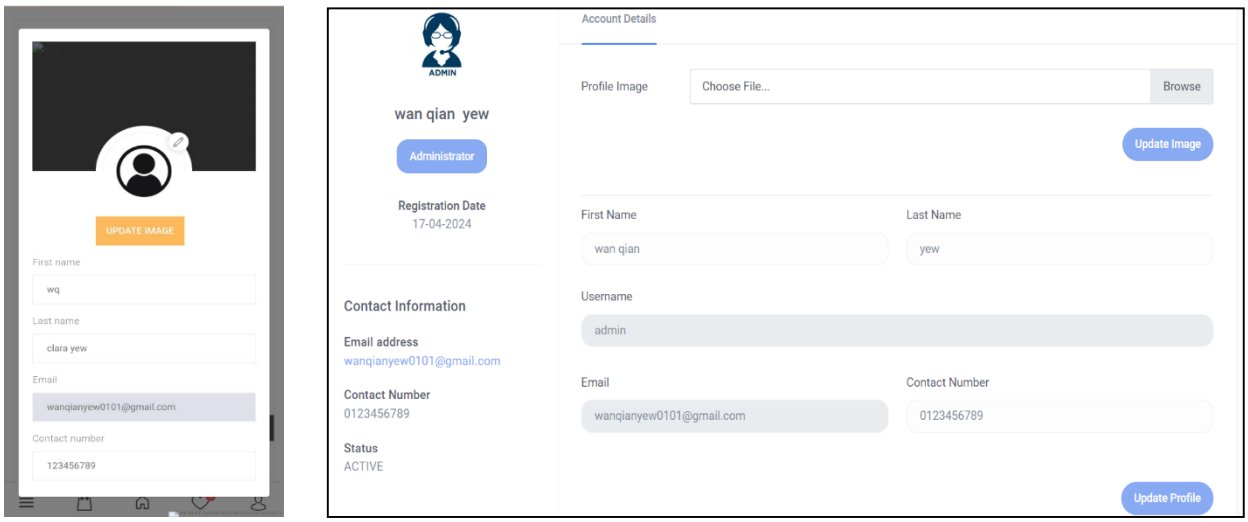


(a) **(b)**

Fig. 6 *Main page of (a) Customer; (b) Administrator*

4.4.3 Manage Account Details Module

The Manage Account Details module consists of two parts, one for changing personal information, and the other for changing the account password. Figure 7 shows the interface for updating personal information for the customer and administrator respectively. Both users can update their name, contact number and personal image in the appropriate fields and then click the Update button to update the profile details.



(a) **(b)**

Fig. 7 *Update profile interface of (a) Customer; (b) Administrator*

Figure 8 shows the interface for updating account passwords for a customer and administrator, respectively. Both users can reset their account passwords by entering a valid email and contact number to receive an email containing a link to reset their passwords. Both users can then click on the link to reset the account password.

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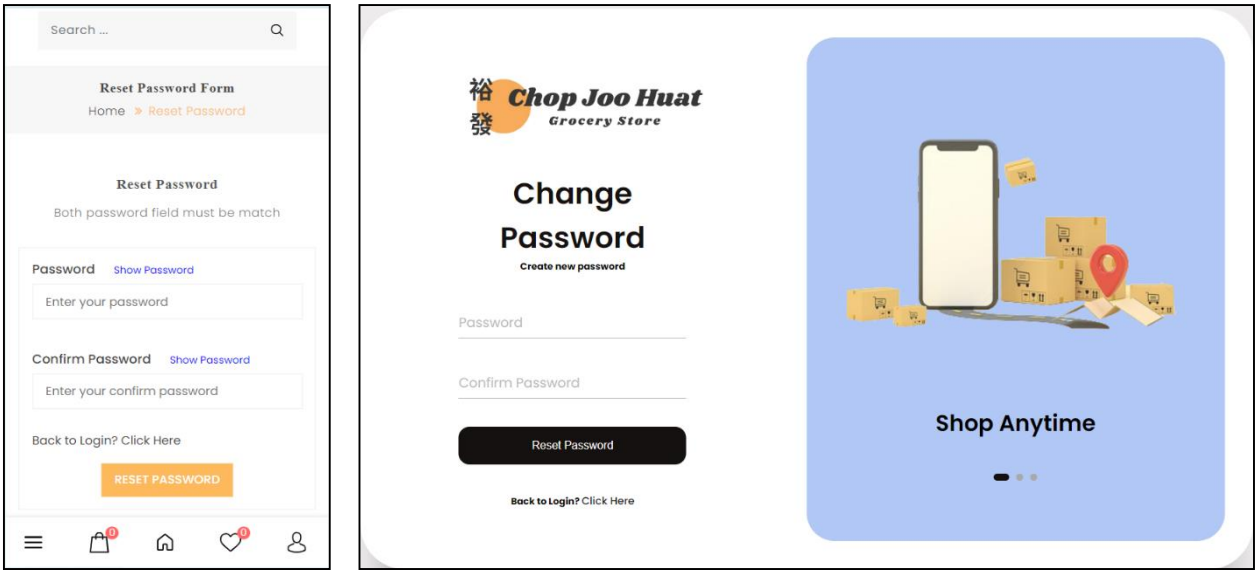


(a) **(b)**

Fig. 8 *Reset password interface of (a) Customer; (b) Administrator*

4.4.4 Manage Grocery Module

In this system, the Manage Grocery module consists of two sub-modules, which are manage grocery categories and manage grocery items. Both sub-modules contain display, add, update and delete functions. In the grocery category sub-module, the administrator cannot add a new category if the name of the new category is the same as the name of an existing category in the database. Figure 9 shows the manage grocery categories interface, where administrators can add, update, and delete grocery categories, as well as view the number of groceries in each category.

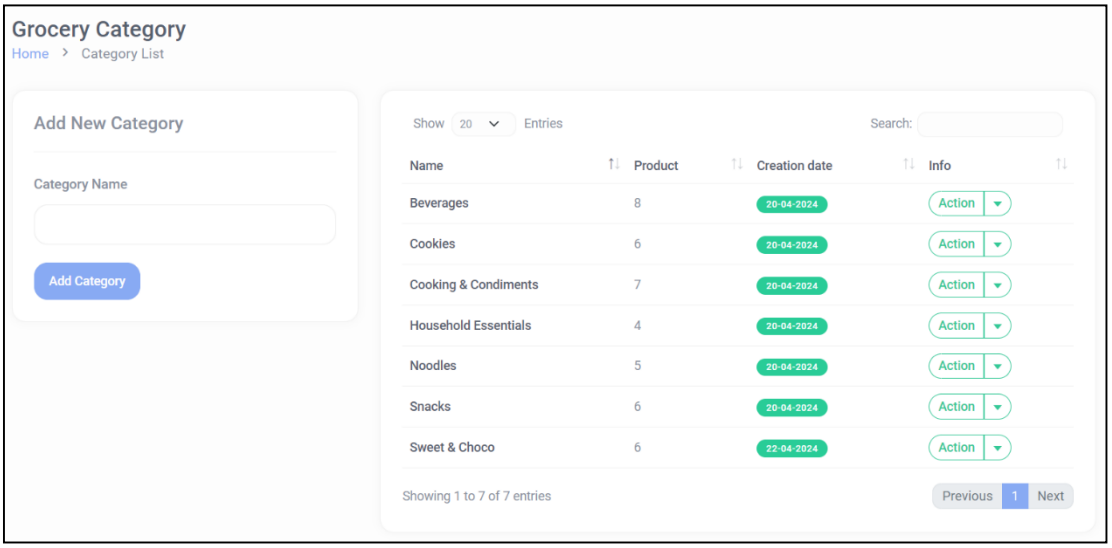
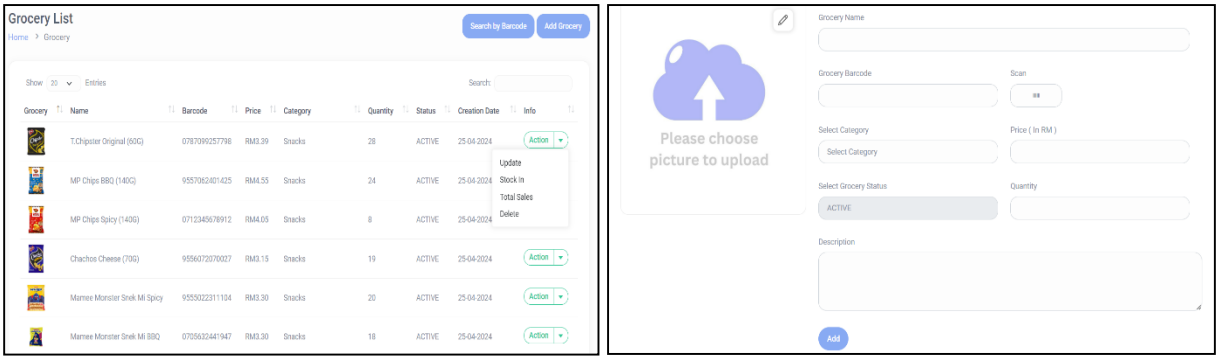


Fig. 9 *Administrator manage grocery categories interface*

Figure 10 shows the grocery list interface, which allows administrators to add, update, and delete groceries by clicking on the "Action" drop-down list to select the action to be performed, as well as to view the remaining quantity of each grocery item.



(a) **(b)**

Fig. 10 *Administrators manage grocery items of (a) grocery list interface; (b) add new grocery interface*

Figure 11 shows the barcode scanning interface, which allows the administrator to scan the grocery barcode to decode and obtain the barcode number of the grocery item. In addition, the administrator can search for existing groceries by scanning the appropriate barcode.

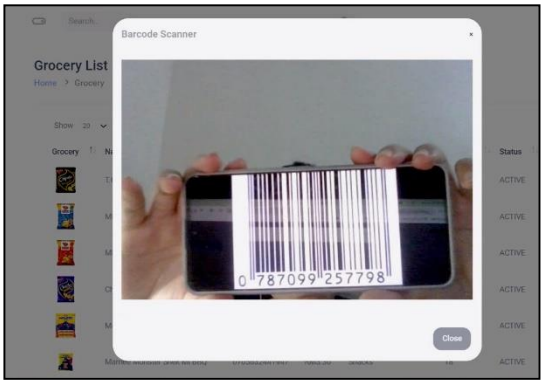
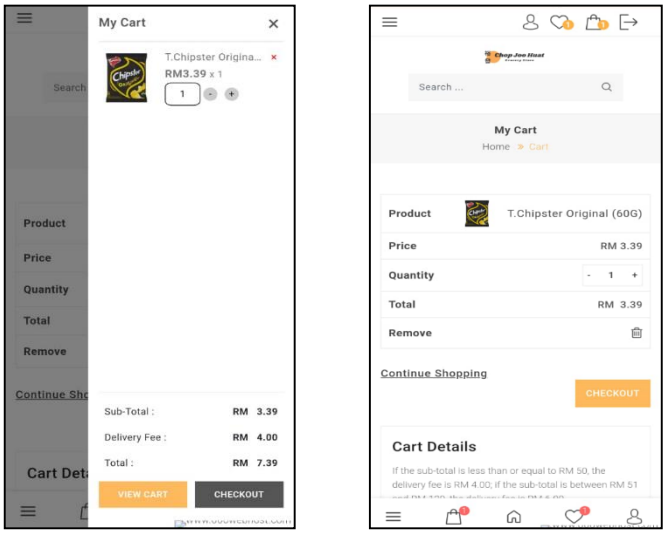


Fig. 11 *Barcode scanning interface*

4.4.5 Manage Order Module

As shown in Figure 12, in the Manage Orders module, the customer can manage the shopping cart by adding, editing, or deleting items in the cart. If the quantity entered exceeds the stock level of the shopping cart items, the customer will not be able to update the quantity of the shopping cart items successfully.



(a) **(b)**

Fig. 12 *Customer (a) Side cart interface; (b) Cart interface*

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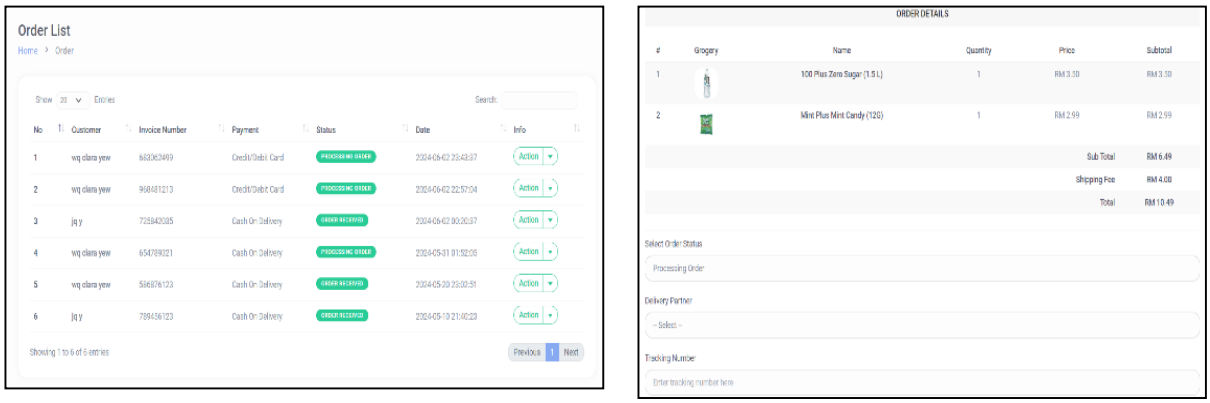
Figure 13 shows the administrator's manage orders interface, where all orders will be listed in a table. The administrator can update the customer's order status. Figure 13(b) shows the order details page where the administrator can update the order status and add the delivery partner and tracking number for the customer's order.

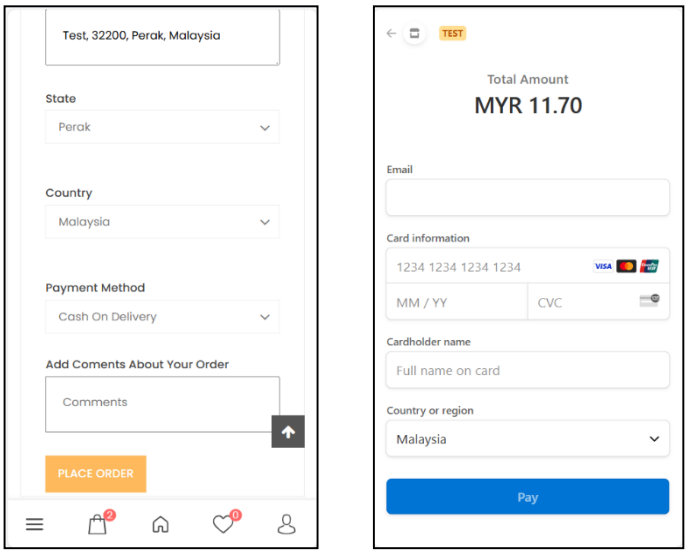


(a) **(b)**

Fig. 13 *Administrator manage order module of (a) Order list interface; (b) Order details interface*

4.4.6 Manage Payment Module

After the customer puts the required groceries into the shopping cart, they can click the "Checkout" button. As shown in Figure 14, the customer will be taken to the checkout page, where they can choose their preferred method of payment and make the payment, after which the order will be successfully placed. There are two types of payment methods which are Cash on Delivery and Debit/Credit Card. If the customer chooses the Debit/Credit card payment method, they will be navigated to the stripe payment page and then they need to enter their card details to make the payment.



(a) **(b)**

Fig. 14 *Customer (a) Checkout interface; (b) Stripe payment interface*

Figure 15 shows that the administrator can view the payment method chosen by the customer when placing the order, as well as the order total for the customer's order.

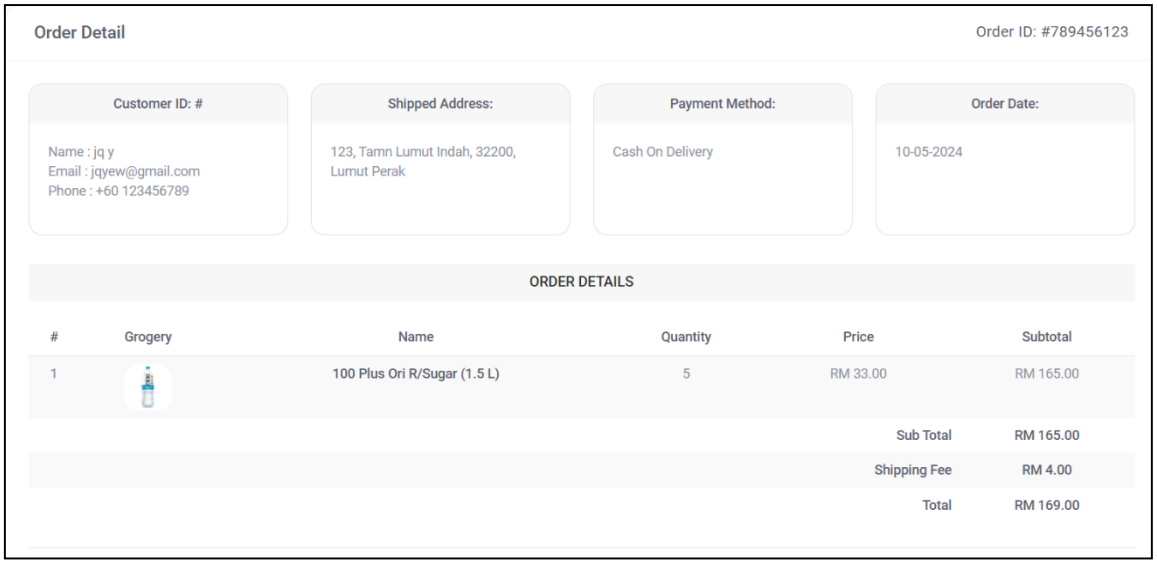
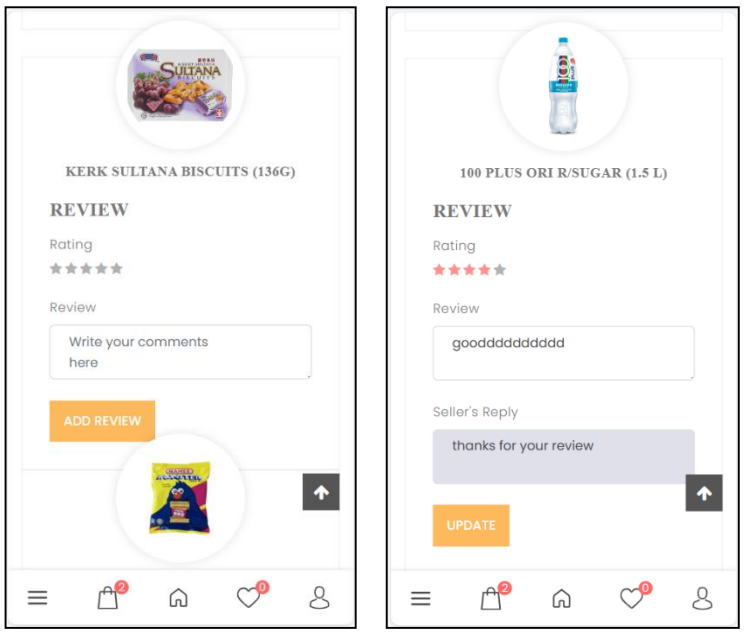


Fig. 15 *Administrator view payment details interface*

4.4.7 Manage Feedback Module

Once the customer's order has been delivered, the customer may click the "Order Received" button to indicate receipt of the order. If the customer does not click the "Order Received" button 7 days after the product has been delivered, the order status will automatically change to "Order Received" status. As shown in Figure 16, once the customer's order status changes to "Order Received," the customer can review order items by rating them and writing feedback. If all order items for that order have been rated, the "All Items Reviewed" statement will be displayed. In addition to this, customers can update their feedback and view the seller's response to their feedback.



(a) **(b)**

Fig. 16 *Customer (a) Add feedback interface; (b) Update feedback interface*

As shown in Figure 17, the administrator's Manage Feedback module, where all customer feedback are listed in a table. The administrator can view and respond to customer feedback.

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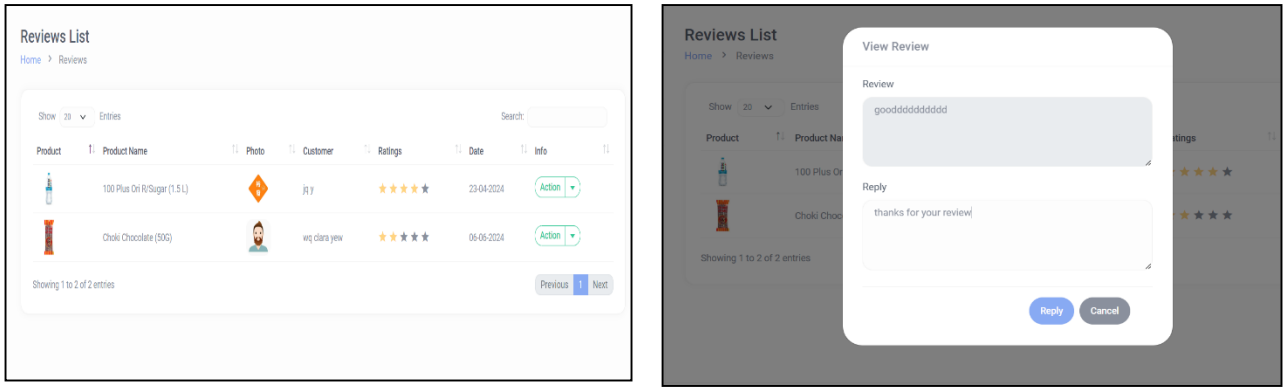

(a) **(b)**

Fig. 17 *Administrator manage feedback module of (a) Feedback list interface; (b) Feedback details interface*

4.4.8 Generate Report Module

As shown in Figure 18, in the Generate Report module, there is a line chart showing the total sales over time and a doughnut chart that shows the number of orders in different order statuses. Moreover, the administrator can enter a start date and an end date to display the total sales between the entered date ranges. After that, the administrator can then click on the "Generate pdf" button to generate the sales report as shown in Figure 19 and print it out.

Fig. 18 *Administrator manage grocery categories interface*

Chop Joo Huat Grocery Store

Kampung Tebing Rabak, Lumut, Perak
dotn381@gmail.com
+60123456789

Sales Report

Date 2024-06-10
Start Date #
End Date #

No	Date	Order	Sales (RM)
1	2024-05-10	1	165.00
2	2024-05-20	1	30.00
3	2024-06-02	3	30.94
4	2024-06-06	1	6.78
5	2024-06-08	2	47.01
		Total Sales	279.73

Fig. 19 *Sales report interface*

4.5 Testing

The testing phase takes place after the development of the system. The purpose of testing is to find out if there are any bugs or defects in the system. If any bugs or defects are found, the bugs will be fixed to ensure that the system works as expected. This section will discuss system testing which tests the functionality of the system and user acceptance testing which collects feedback from stakeholders.

4.5.1 System Testing

The purpose of conducting this testing is to verify that the developed system meets the functional and non-functional requirements. In this section, the whole system will be tested such as the integration of system modules to find out if there are any defects. Table 5 shows the test cases and the results of passing or failing the test cases.

Table 5 *System Test Cases*

Test Case ID	Requirement ID	Description	Test Status
TC_100	**REQ_100**	**Register**	**-**
TC_100_01	REQ_101	The system should allow customer to register an account.	PASS
TC_100_02	REQ_102	The system should allow customer to input their registration information into the system.	PASS
TC_100_03	REQ_103	The system shall validate the customer's registration inputs.	PASS
TC_100_04	REQ_104	The system should verify the password format.	PASS
TC_100_05	REQ_105	The system must not allow registration requests that use the same e-mail address.	PASS
TC_200	**REQ_200**	**Login**	**-**
TC_200_01	REQ_201	The system should allow the user to log in to the system.	PASS
TC_200_02	REQ_202	The system should allow the user to input login details into the system.	PASS
TC_200_03	REQ_203	The system should display an error message if the login details is invalid.	PASS
TC_200_04	REQ_204	The system should not allow to login, if the e-mail or username and password entered are incorrect.	PASS
TC_300	**REQ_300**	**Manage Account Details**	**-**
TC_300_01	REQ_301	The system should allow the user to change their account password.	PASS
TC_300_02	REQ_302	The system should allow the customer to change their account details.	PASS
TC_300_03	REQ_303	The system should update the changes of the account details into the database.	PASS
TC_300_04	REQ_304	The system should disallow changes to existing account details if the newly entered details are invalid.	PASS
TC_300_05	REQ_305	The system should display an error message if the user input is invalid.	PASS
TC _400	**REQ_400**	**Manage Groceries**	**-**
TC_400_01	REQ_401	The system should allow administrator to add, update and delete grocery categories.	PASS
TC_400_02	REQ_402	The system should allow administrator to add, update and delete grocery items.	PASS
TC_400_03	REQ_403	The system should display the updated page after management procedure has been completed.	PASS
TC_400_04	REQ_404	The system should display an error message if the input details are invalid.	PASS
TC_400_05	REQ_405	The system should disable changes or adds if the newly entered information is invalid.	PASS
TC_500	**REQ_500**	**Manage Order**	**-**
TC_500_01	REQ_501	The system should allow administrator to view and update the order status.	PASS
TC_500_02	REQ_502	The system should allow administrator to delete the order.	PASS

Table 5 (cont)

TC_500_03	REQ_503	The system should allow customer to add, edit, and delete the grocery item in their cart.	PASS
TC_500_04	REQ_504	The system should be able to display grocery item details page to the customer.	PASS
TC_500_05	REQ_505	The system should update the order status within five seconds.	PASS
TC_500_06	REQ_506	The system should allow customer to view their order history and their order details.	PASS
TC_600	**REQ_600**	**Manage Payment**	**-**
TC_600_01	REQ_601	The system should allow customer to check out the grocery item in the cart.	PASS
TC_600_02	REQ_602	The system should allow customer to enter payment details based on the payment method selected.	PASS
TC_600_03	REQ_603	The system shall calculate and display the total amount to be paid.	PASS
TC_600_04	REQ_604	The system should display an error message if the payment details entered are invalid.	PASS
TC_600_05	REQ_605	The system should allow the customer to complete their payment within 10 seconds	FAIL
TC_700	**REQ_700**	**Manage Feedback**	**-**
TC_700_01	REQ_701	The system should allow user to add, edit, and update the review or feedback.	PASS
TC_700_02	REQ_702	The system should allow user to view the feedback.	PASS
TC_700_03	REQ_703	The system should display an error message if the input details are invalid.	PASS
TC_700_04	REQ_704	The system should allow the administrator to reply to the customer's review.	PASS
TC_800	**REQ_800**	**Generate Report**	**-**
TC_800_01	REQ_801	The system should allow the administrator to input the start date and end date for sales report.	PASS
TC_800_02	REQ_802	The system should display the sales report based on the dates input.	PASS
TC_800_03	REQ_803	The system should allow the administrator to print the report.	PASS
TC_800_04	REQ_804	The system should display the report details within three seconds.	PASS

4.5.2 Overall Test Result

This section shows and explains the summary of the test results of the system testing. To test the developed system, a total of 38 test cases for 8 modules were conducted. Table 6 shows the overall test results of the system, testing.

Table 6 *Overall Test Result*

Test Case	Total Test Cases	Total Success	Test Failed
TC_100	5	5	-
TC_200	4	4	-
TC_300	5	5	-
TC_400	5	5	-
TC_500	6	6	-
TC_600	5	4	1
TC_700	4	4	-
TC_800	4	4	-
Total	38	37	1

During testing, only one test case, TC_600_05 which corresponds to requirement REQ_605, failed. For optimal performance, the Stripe Checkout page should be accessible within 10 seconds, but it now takes more than 10 seconds to load the Stripe Checkout page. The failure of this test case indicates that the performance

criteria cannot be met, possibly due to a slow network connection or reliance on external resources such as the Stripe API.

As shown in Figure 20, the overall test results are summarized in the form of a pie chart, where the total percentage of successful test cases is 97.4%.

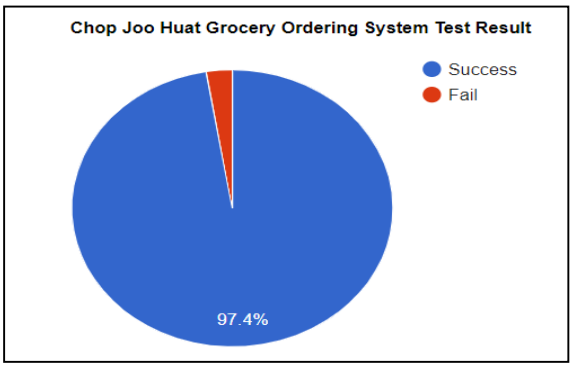

Fig. 20 *Pie chart of overall test result*

4.5.3 User Acceptance Testing

User Acceptance Testing (UAT) plays a crucial role in ensuring the success of a software project by verifying that the developed system meets the needs and expectations of end users and stakeholders. User Acceptance Testing is used to discover defects, usability issues and performance bottlenecks that may have been overlooked in the early testing stages, thus improving the overall quality of the software. In order to gather feedback from stakeholders, user acceptance forms were created and given to testers such as store owner and customer to evaluate the system. Both user acceptance forms are attached in the Appendix section. In the evaluation form, each tester will have different modules that should be tested. If the module meets the tester's expectations, they can check the “Pass” column; if they are not satisfied with the module, they can check the “Fail” column If the user has any feedback, they can fill in the note column. The result of the evaluation form was that the testers ticked 'pass' on the results of all the modules. This indicates that the developed system meets the expectations of the stakeholders. It also means that the developed system meets the functional and non-functional requirements as planned.

5. Conclusion

In conclusion, Chop Joo Huat Grocery Ordering System offers a solution to the challenges faced by the store owner and customers. The web-based grocery ordering system is developed to replace the traditional selling and purchasing process and overcome the problems currently faced by the owner of Chop Joo Huat Grocery Store. The web-based platform offers several advantages such as streamlining the process, reducing errors, and increasing customer satisfaction. Time wastage and error-prone situations are reduced as the system makes it easier for customers to place orders and prevents miswriting of customer orders. However, a number of shortcomings were identified, including the limited payment options offered to customers by the developed system and the fact that the system was only available in English. For further enhancement, the system should be made more user-friendly by adding the ability to convert the language of the system to other languages, and more payment methods, such as online banking, could be introduced. These enhancements will improve the overall user experience and the system’s functionality. In summary, the Chop Joo Huat grocery ordering system has been successfully developed to achieve its objectives and provide a systematic approach to online grocery ordering.

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Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

This journal requires that all authors take public responsibility for the content of the work submitted for review. The contributions of the authors to the development of the Chop Joo Huat Grocery Ordering System are delineated as follows: study conception and design: Yew Wan Qian, Mohd Zainuri Bin Saringat; data collection: Mohd Zainuri Bin Saringat; analysis and interpretation of results: Yew Wan Qian, Mohd Zainuri Bin Saringat; draft manuscript preparation: Mohd Zainuri Bin Saringat. All authors reviewed the results and approved the final version of the manuscript.

References

[1] J. Martín, F. Pagliara, and C. Román, "The Research Topics on E-Grocery: Trends and Existing Gaps," *Sustainability*, vol. 11, no. 2, p. 321, Jan. 2019, doi: https://doi.org/10.3390/su11020321.

[2] D. Zhang, L. G. Pee, and L. Cui, "Artificial intelligence in E-commerce fulfillment: A case study of resource orchestration at Alibaba's Smart Warehouse," *International Journal of Information Management*, vol. 57, p. 102304, Apr. 2021, doi: https://doi.org/10.1016/j.ijinfomgt.2020.102304.

[3] Kumari Suchi Pandey and Dr. Nandan Singh, "Trends in E-Commerce: Post Covid-19 Pandemic," vol. 11, no. 3, pp. 1414–1418, Mar. 2023, doi: https://doi.org/10.22214/ijraset.2023.49686.

[4] N. V. Florea *et al.*, "Trends and Perspectives of Romanian E-Commerce Sector Based on Mathematical Simulation," *Electronics*, vol. 11, no. 15, p. 2295, Jul. 2022, doi: https://doi.org/10.3390/electronics11152295.

[5] M. Mkansi, C. Eresia-Eke, and O. Emmanuel-Ebikake, "E-grocery challenges and remedies: Global market leaders perspective," *Cogent Business & Management*, vol. 5, no. 1, Apr. 2018, doi: https://doi.org/10.1080/23311975.2018.1459338.

[6] O. Tyrväinen and H. Karjaluoto, "Online grocery shopping before and during the COVID-19 pandemic: A meta-analytical review," *Telematics and Informatics*, vol. 71, p. 101839, Jul. 2022, doi: https://doi.org/10.1016/j.tele.2022.101839.

[7] G. Gurung, R. Shah, and D. P. Jaiswal, "Software Development Life Cycle Models-A Comparative Study," *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, vol. 6, no. 4, pp. 30–37, Jul. 2020, doi: https://doi.org/10.32628/cseit206410.

[8] Banerjee, P., Biresh kumar, Amarnath singh, Singh, A., & Kumari, R., "Efficiency Analysis of Software Development Life Cycle Models," *International Journal of Scientific Research in Computer Science, Engineering and Information Technology,* vol. 8, no. 2, pp. 152-162, 2020, https://www.academia.edu/download/63098188/IJCST-V8I2P2320200426-63399-4e398e.pdf

[9] L. K. P. D. Gunawardhana, "Process of Requirement Analysis Link to Software Development," *Journal of Software Engineering and Applications*, vol. 12, no. 10, pp. 406–422, 2019, doi: https://doi.org/10.4236/jsea.2019.1210025.

[10] D. Anjani, H. Hilaliyah, and D. Novianti, "M-Absence : Analysis and Design using Unified Modelling Language (UML)," *Journal of Physics: Conference Series*, vol. 1539, p. 012040, May 2020, doi: https://doi.org/10.1088/1742-6596/1539/1/012040.

Appendix A: User Acceptance Form

The user acceptance form by store owner.

User Acceptance Testing (UAT)

Chop Joo Huat Grocery Ordering System

Name : Ngo Zhen Khang

Phone Number : 018-2660279

Position : Owner

Acceptance Criteria	Test Results		Note
	Pass	Fail	
Login			
a) Display Login page	/		
b) Able to login into the system by entering valid email and password	/		
Manage Account Details			
a) Display Profile page	/		
b) Able to change personal profile details	/		
c) Display Reset Password page	/		
d) Able to change account password	/		
Manage Groceries			
a) Display Grocery Categories page	/		
b) Able to add new grocery category	/		
c) Able to update the grocery category	/		
d) Able to delete the grocery category	/		
e) Display Grocery Item page	/		
f) Able to add new grocery item	/		
g) Able to update the grocery item	/		
h) Able to delete the grocery item	/		
Manage Order			
a) Display Order List page	/		
b) Display the Order Details page	/		
c) Able to update the order status	/		
Manage Payment			
a) Able to view payment details of orders	/		
Manage Feedback			
a) Display Customer Feedback List page	/		
b) Display Customer Feedback Details page	/		
c) Able to reply to customer feedback	/		
Generate Report			
a) Display Sale Report page	/		
b) Able to input the start and end dates of the sale report	/		
c) Able to display and print the sale report based on the date selected	/		

I, Ngo Zhen Khang hereby declare that the information provided is true and correct.

Tested by,

(Ngo Zhen Khang)

Date: 8/6/2024

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The user acceptance form by customer.

User Acceptance Testing (UAT)

Chop Joo Huat Grocery Ordering System

Name : Chong Lai Yin

Phone Number : 012-5331187

Position : Customer

Acceptance Criteria	Test Results		Note
	Pass	Fail	
Register			
a) Display Registration page	/		
b) Able to register a new account by verifying email	/		
Login			
a) Display Login page	/		
b) Able to login into the system by entering valid email and password	/		
Manage Account Details			
a) Display Profile page	/		
b) Able to change personal profile details	/		
c) Display Reset Password page	/		
d) Able to change account password	/		
Manage Order			
a) Display Grocery Item Menu page	/		
b) Display Grocery Details page	/		
c) Display Shopping Cart Page	/		
d) Able to add grocery item into the cart	/		
e) Able to update quantity of cart item	/		
f) Able to remove the cart item	/		
Manage Payment			
a) Display the Checkout page	/		
b) Able to enter the shipping details	/		
c) Able to select preferred payment method	/		
d) Able to make online payment in stripe checkout page	/		
e) Display Order Details page	/		
Manage Feedback			
a) Display Customer Feedback page	/		
b) Display Feedback Details Page	/		
c) Able to add feedback for the order item	/		
d) Able to update the feedback details	/		

I, Chong Lai Yin hereby declare that the information provided is true and correct.

Tested by,

(Chong Lai Yin)

Date: 8/6/2024