



AITCS

Homepage: <http://publisher.uthm.edu.my/periodicals/index.php/aitcs>
e-ISSN :2773-5141

Online Gas Tank Delivery System for Sheng Leong Trading

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DOI: <https://doi.org/10.30880/aitcs.2023.04.01.075>

Received 14 June 2022; Accepted 07 June 2023; Available online 30 June 2023

Abstract: The Online Gas Tank Delivery System for Sheng Leong Trading is developed to make it easy for customers to purchase gas tanks from the grocery store. The personal details for delivery purposes will be filled inside the system while making the order. Additionally, the system is being developed to replace the existing manual system of the grocery store. Plus, the proposed system is based on the waterfall model. Some of the activities are constructing the objective, problem statement, and requirements, and sketching the user interface and data dictionary of the system. The front-end language that is used is HTML, and CSS. Moreover, MySQL Workbench is used for the database. Thus, the Online Gas Tank Delivery System for Sheng Leong Trading is being developed to ease the process of storing purchasing data in a proper database.

Keywords: Delivery, Purchasing, Storing, Managing

1. Introduction

The web-based system acts as an intermediary for users to access a system by using the gadget around them. Additionally, a web-based system is a collection of Internet-based information pages that may be accessed from anywhere in the globe (Primastomo, 2015). Informative sources are being published as a website for users to read and find information. The social nature of a website inspires a social reaction from its users, which results in delight (Wang, 2011). The proposed web-based is also based on an information system where is system that provides data for organizational decision-making and control (Walia Bajaj et al., n.d.). Sheng Leong Trading is a grocery store where it is one of the residential area sources to find household items including gas tanks. Currently, the grocery store is using the manual method where all purchasing gas tanks are manual. Therefore, the online Tong Gas Delivery system will be used for customers and sellers to indirectly communicate inside the system for ordering gas tank delivery. Customers can order gas tanks from Sheng Leong Trading grocery store without going to the store or making a call order delivery service.

An online Tong Gas Delivery system is discovered to solve the manual transaction of the gas tank. It is a system that allows the customer to place an order for a cooking gas tank and have it delivered

to a customer's home if the customer's gas tank has become empty. The main purpose of the system is to identify the problem statement for the current system, to design and properly develop a system to solve the objective of managing cooking gas tank ordering, purchasing, and delivery using the structured approach and the waterfall model, and to test the system between the targeted users. Furthermore, the proposed system consists of two main modules which will be developed for the customer and seller. Plus, one additional module is the admin module.

1.2 Report Organization

In Chapter 1, the project begins with a description of the project's background and moves to a description of the field of Online Tong Gas Delivery System for Sheng Leong Trading. The problem statement, the project's objectives, expected results, and 5 project significance. The chapter also includes the concept of the system that will be developed.

In Chapter 2, a brief discussion of the relevant works that have already been introduced. There is also the comparison between ourselves and others. The current system's problem and attempted to resolve it were identified. This chapter also discusses the challenges that were encountered by us in completing this project.

Chapter 3, named methodology were focused on the Waterfall Model, Planning Phase, Analysis Phase, Design Phase, Implementation Phase, and Prototype Phase.

In chapter 4, System Requirement Analysis, DFD Context Diagram (DFD CD), DFD Level 0 are demonstrated, Requirement Traceability Matrix, Entity Relationship Diagram, Design, Interface Design, and Schema Table. The components that have been used to connect the system are also mentioned.

Chapter 5, is called Implementation and Testing, and it covers database implementation, front-end design implementation, testing implementation, test results, and overall results.

In chapter 6, the current state and recommendation of this project have been talked about. In addition, all of the aspects of the project are attempted to be covered by us, which is referred to as a conclusion.

2. Related Work

The study in this project focuses on the process of purchasing, managing, and delivering gas tanks for a grocery store, Sheng Leong Trading which is located in Jasin, Malacca. A grocery store is a shop where essential household items and groceries are sold inside the store. Additionally, a grocery store is a physical location with shelves where customers can peruse products and make purchases (Ocepek, 2018). Typically, a gas tank is displayed in front of the grocery store. Unfortunately, most grocery stores are still using the manual purchasing of gas tanks that only allow the customer to purchase at the store. An online Tong Gas Delivery system is discovered to solve the manual transaction of the gas tank. It is a system that allows the customer to place an order for a cooking gas tank and have it delivered to a customer's home if the customer's gas tank has become empty

A literature review is being conducted for the existing related system to explain the proposed system that will be developed where the purpose of the review is to guide the proposed system and to increase the enhancement and advantages of the proposed system. In addition, the review has discussed the features and themes that are related to delivery, purchasing, and managing system based on the website. Moreover, the literature review has also discussed the background of the system that will be developed and the technology used in the development of the web-based system. Thus, the comparison between the related existing system and the proposed system will be explained in this report.

2.1 Online Gas Tank Delivery System

A delivery system needs a modern communication device such as smartphones, laptops, and tablets to get access to the system. The existence of the systematic and organized web-based gas tank delivery system is to ease the process of purchasing, managing, and delivering gas tanks between the

seller and the customers. Additionally, the delivery system needs some personal data such as name, phone number, and addresses from the customer to store as the reference for the delivery staff to deliver the gas tank directly to customers' houses. The seller and customers can communicate indirectly to make gas tank order.

2.2 Comparison with the Existing Systems

The results of a comparison of the three current systems with the proposed system are shown in Table 1. There are three existing related systems which are JayaGas (2018), BeliGas (2020), and Recommend. my (2020). There are seven features and modules that are compared such as the platform, registration and login module, payment module, tracking status, cancel order, calendar features, and administrator module. Table 1 shows the comparison between the developed system and the existing system based on their platform, registration and login module, payment module, tracking status, cancel order and calendar features and administrator module.

Table 1: System's Comparison

Features/Modules	JayaGas	Recommend. my	BeliGas	Online Gas Tank Delivery System
Platform	Web-based Information System	Web-based Information System	Mobile-based Application System	Web-based Information System but support mobile version
Registration and login module	Yes	Yes	Yes	Yes
Payment module	Payment by cash and credit or debit card	Payment using online payment	Payment using cash on delivery	Payment using cash on delivery, payment gate away, and upload on Google Form
Tracking status	Non-real-time	Non real-time	Real-time	Non real-time
Cancel order	No	No	Yes	Yes
Calendar features	Yes	No	No	Yes
Administrator Module	Not Available	Not Available	Not Available	Available

3. Methodology/Framework

This segment will discuss the methodology used for the development of the system.

3.1 The Waterfall Model

The Waterfall Model was chosen because it is one of the simplest software development methodologies among other available software development methodologies. It is a linear-sequential process and each step must be fully finished before moving on to the next (Alshamrani et al., n.d.). Table 2 shows each phase of the Waterfall model and the activities during the entire project development.

Table 2: Software Development Activities and Respective Task

Phase	Task	Output
Requirement	-Proposed the project -Determine the project schedule, activities, and output -Collect user requirements	-Project proposal -Develop a Gantt chart
Design	-Design the database -Design the interface on the website -Design the module	-Designed database and interface of the system
Implementation	-Develop the interface of the system -Develop the code for the system	-The developed interface of the system -Developed code for the system
Verification	-Perform user acceptance testing -Conduct testing	-Test plan and test cases -Feedback documentation from users
Maintenance	-Fixing errors after being used by the users -Collect errors and defects list	-Feedback about the system from users -Updated system

4. Analysis and Design

This segment will be discussed the findings from the analysis and design.

4.1 Functional & Non-Functional Requirement

System requirement analysis needs to identify the requirements needed for the system. The analysis of the system requirement has the detailed requirement that is needed and it will make the development of the proposed system easier. There is two (2) type of system requirements which are the functional requirement and non-functional requirement based on table 3 and 4. Table 3 and 4 shows the functional and non-functional requirement for the system.

Table 3: Functional Requirement

No	Module	Functional Requirement
1.	Customer Module	<ol style="list-style-type: none"> The system allows the customers to register an account by filling out the registration form. The system allows the customers to log in to their account by filling in their email address and password. The system allows customers to log in and register by clicking the register and login button. Order and purchasing function The system will be viewed the calendar features as the main menu for customers. The system allows the customers to add gas tank orders by clicking on the day of the month inside the calendar.
2.	Seller Module	<ol style="list-style-type: none"> The system allows the customers to edit their profile accounts by clicking the edit button. Add inventory functional requirements
3.	Admin Module	<ol style="list-style-type: none"> Add remove and add user functional requirements

Table 4: Non-Functional Requirement

No	The Type	Requirement
1.	Operability Requirement	1. The system can be accessed from any type of devices such as a mobile phone or laptop. 2. The system can be accessed using at least 3 Mbps of internet speed. 3. The system can be accessed 24 hours without any fixed maintenance time
2.	Usability Requirement	1. Each page of the system must load within 2 seconds.
3.	Security Requirement	1. The system has safety features which a password is needed for both sellers and customers to access the system

4.2 Data Flow Diagram (DFD)

Data Flow Diagram (DFD) level 0 is a component of the context diagram and it is the estimated activities and processes that are related to the proposed system. Based on figure 1, shows the DFD level 0 for the Online Gas Tank Delivery System for Sheng Leong Trading for web-based that consists of 7 processes which are registration, login, profile editing, ordering, payment, stock editing, and user managing.

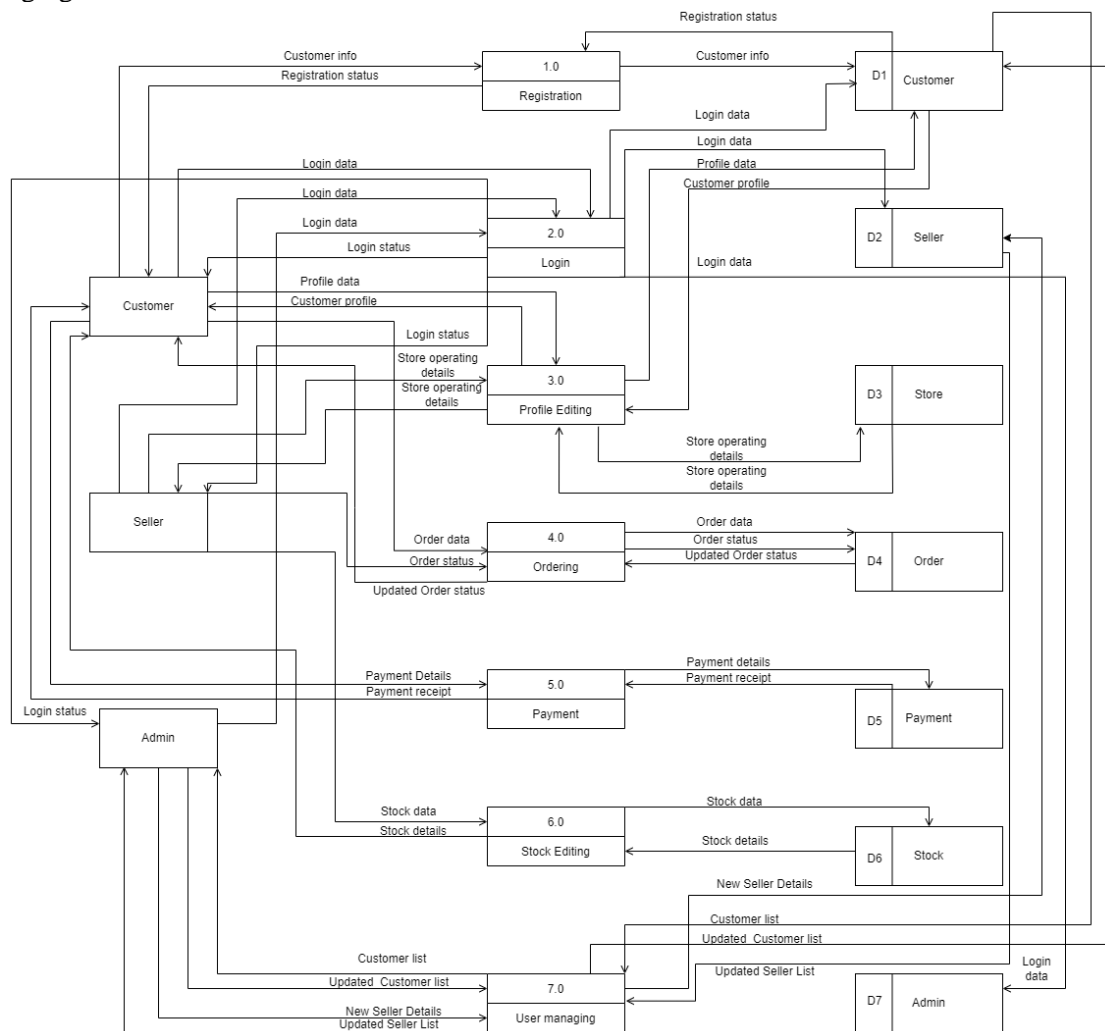


Figure 1: Data Flow Diagram (DFD) level 0

4.3 Entity Relationship Diagram (ERD)

Entity Relationship Diagram (ERD) is a detailed figure where it is shown the relationship between the entities, relationship, and attribute. ERD is used to design the database. ERD shows the relationship for every table including the attributes that are included in the table below. ERD is built to describe the relationship between the entities and the system. Figure 2 shows the details about the entity relationship for Online Gas Tank Delivery System for Sheng Leong Trading

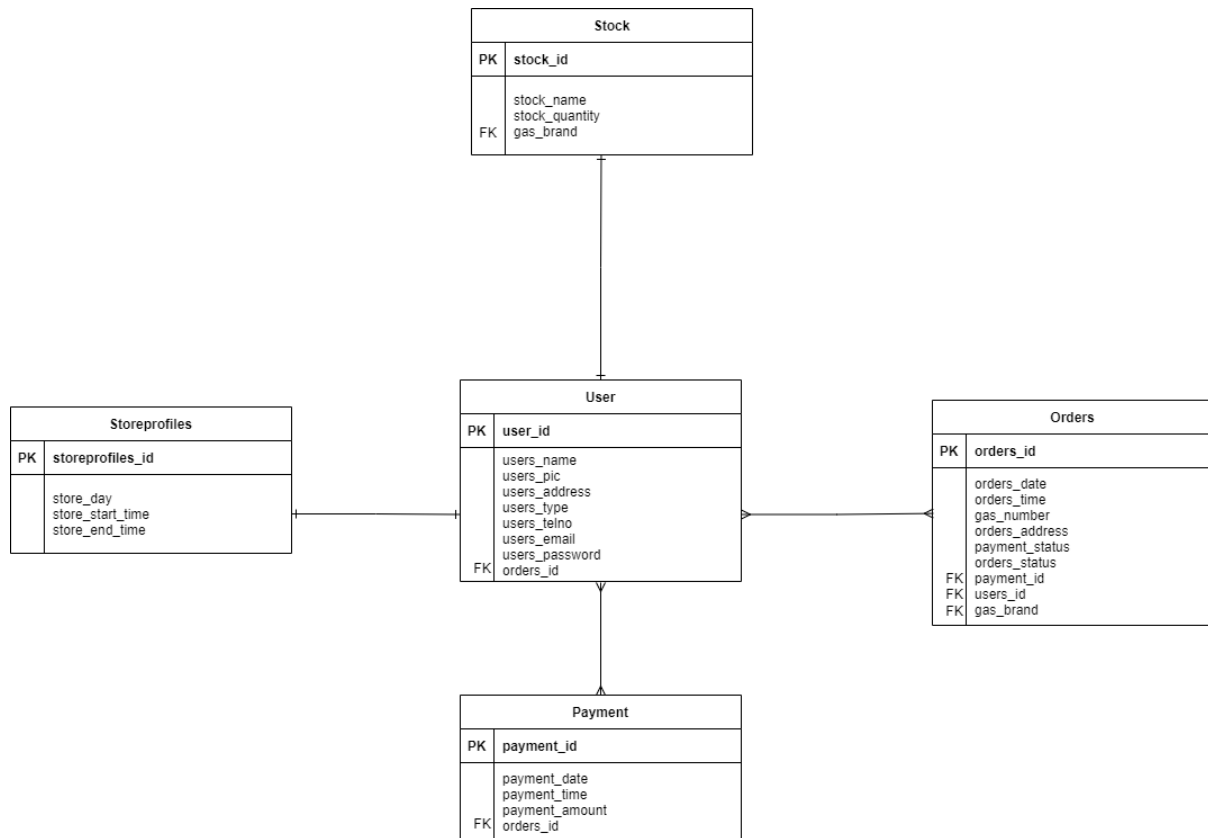


Figure 2: Entity Relationship Relationship (ERD)

4.4 System Flowchart

A system flowchart is a figure that shows the process and path for each entity that is involved inside the system. The flowchart also shows the steps on how the process of data storing happens and the process is connected. Figure 3 shows the process involved in admin such as login, viewing the main page, viewing customer lists, viewing seller lists, and logout.

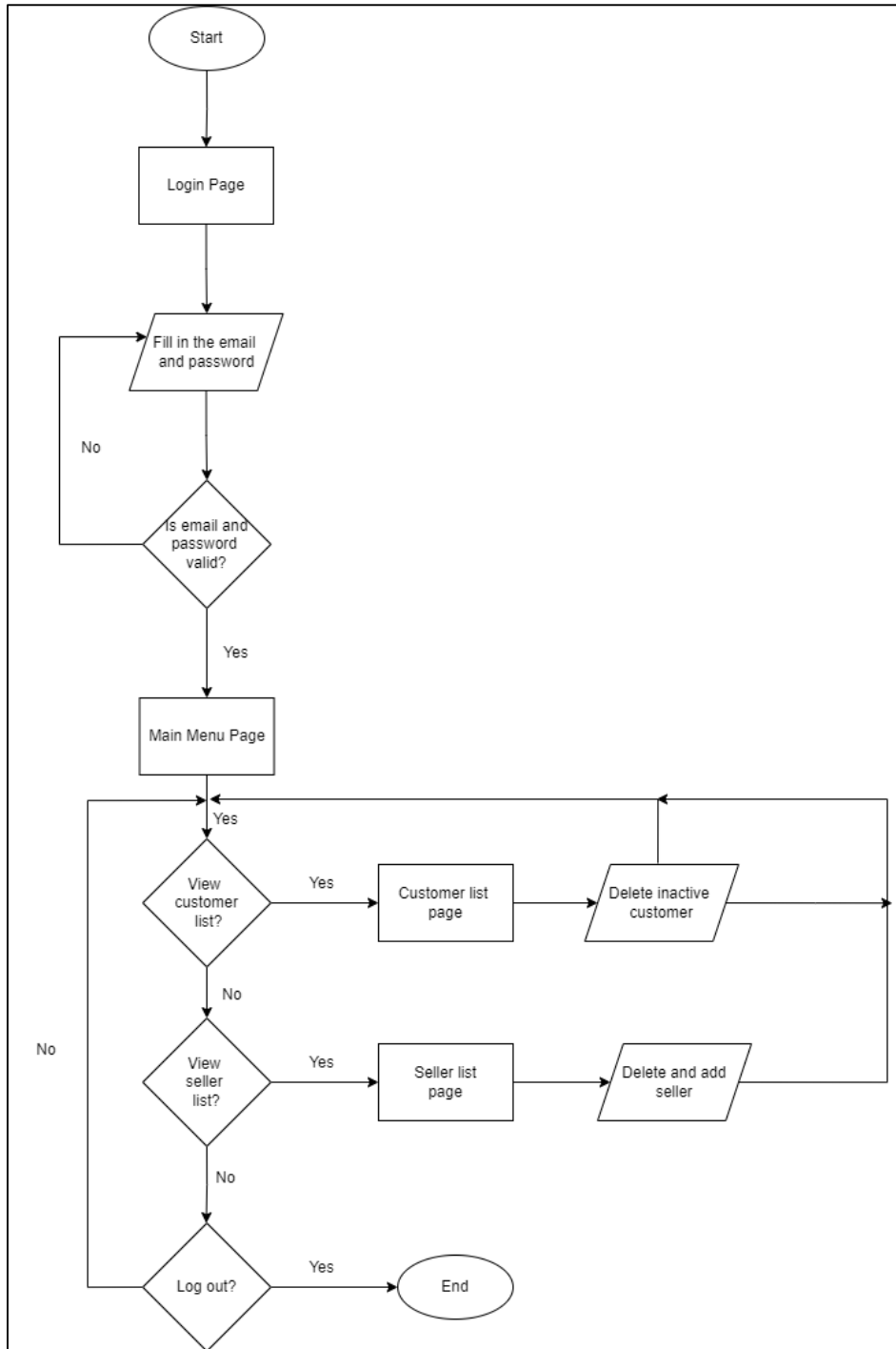


Figure 3: Admin Flowchart

Figure 4 shows the process that is involved for the seller which is login, view the main menu, store profile check, view customer order, check stocks amount, and logout.

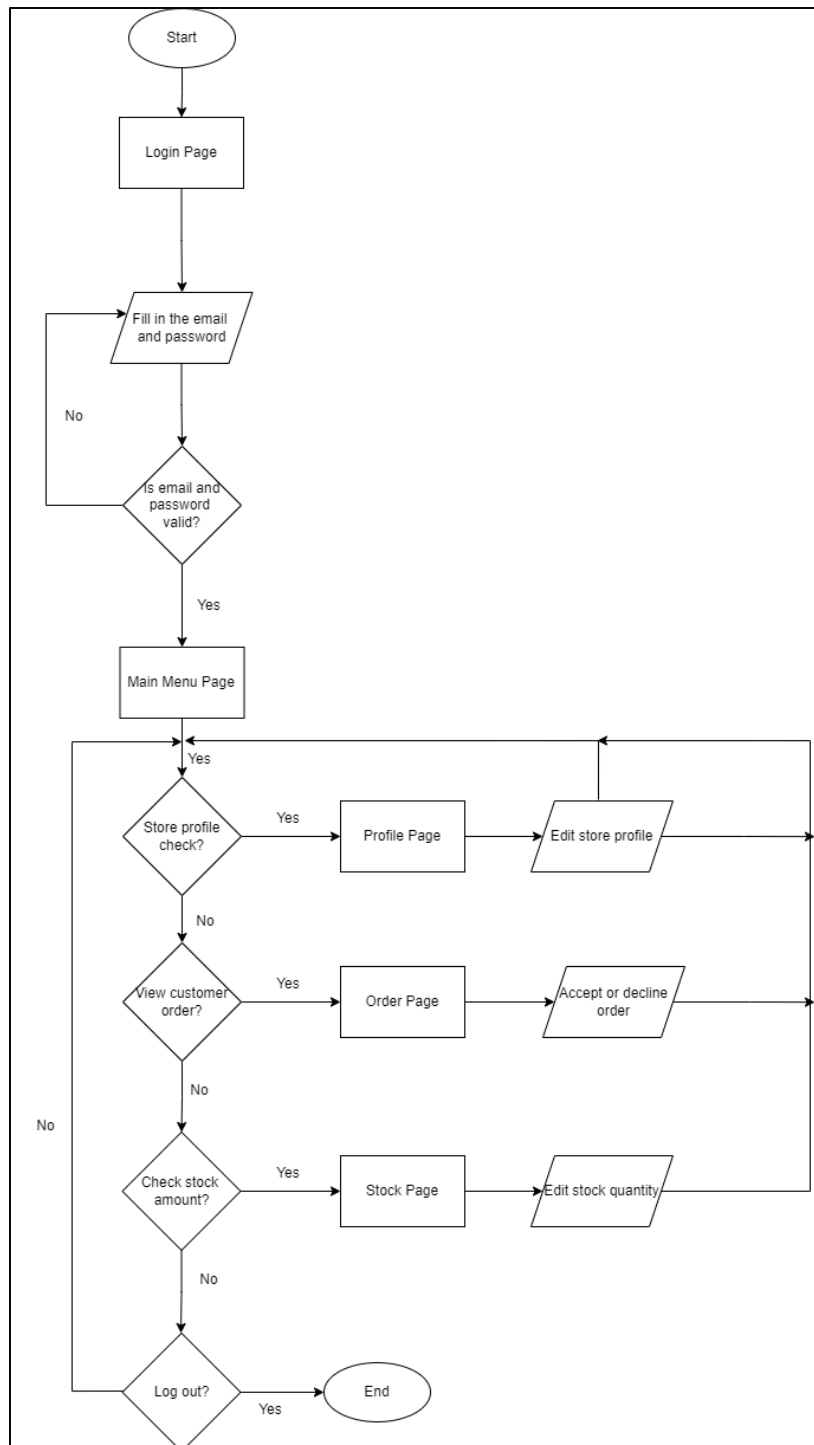


Figure 4: Seller Flowchart

Figure 5 shows the process involved for the customer such as login, registering, viewing the main menu, profile check, store profile view, order page, and logout.

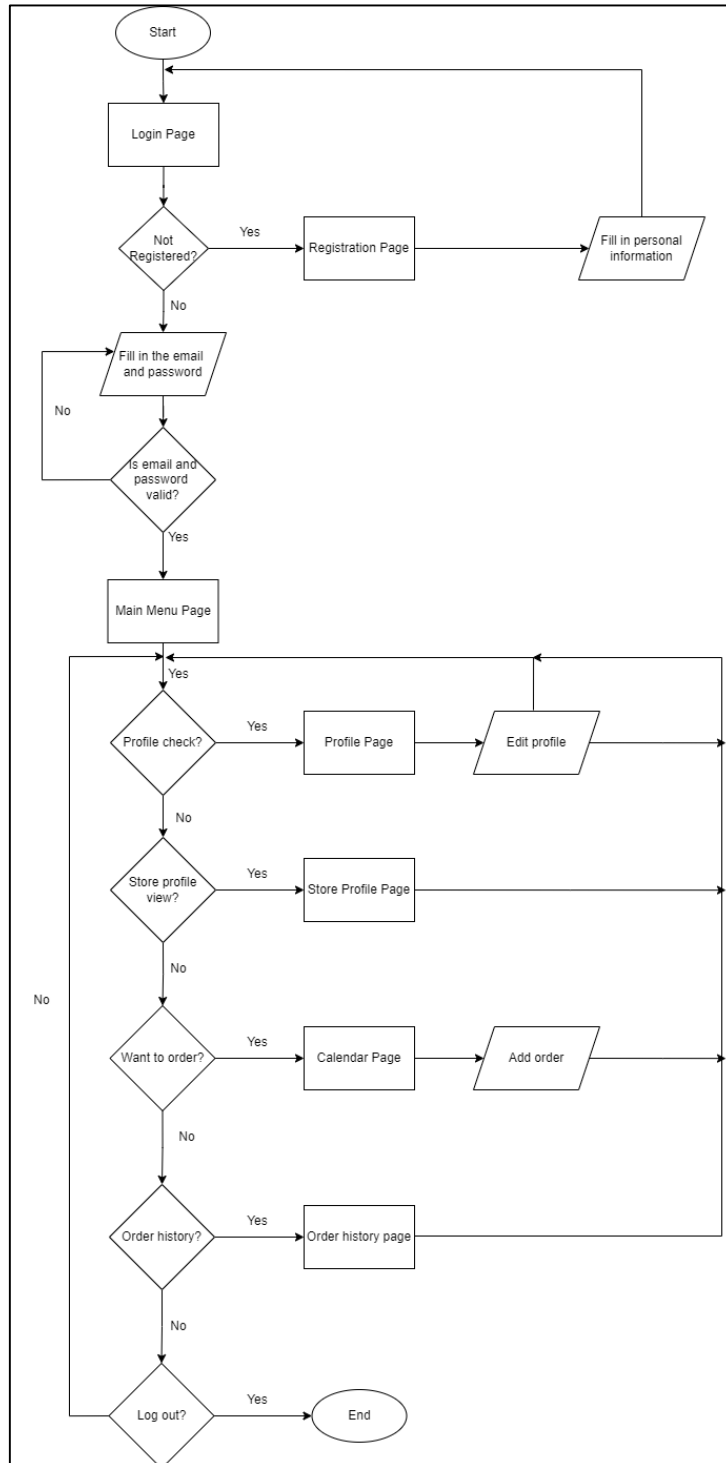


Figure 5: Customer Flowchart

4.5 User Interface

The system user interface aims to give an actual description system for the proposed system. The user interface needs to be planned first to get an organized and systematic module arrangement before the real system is developed.

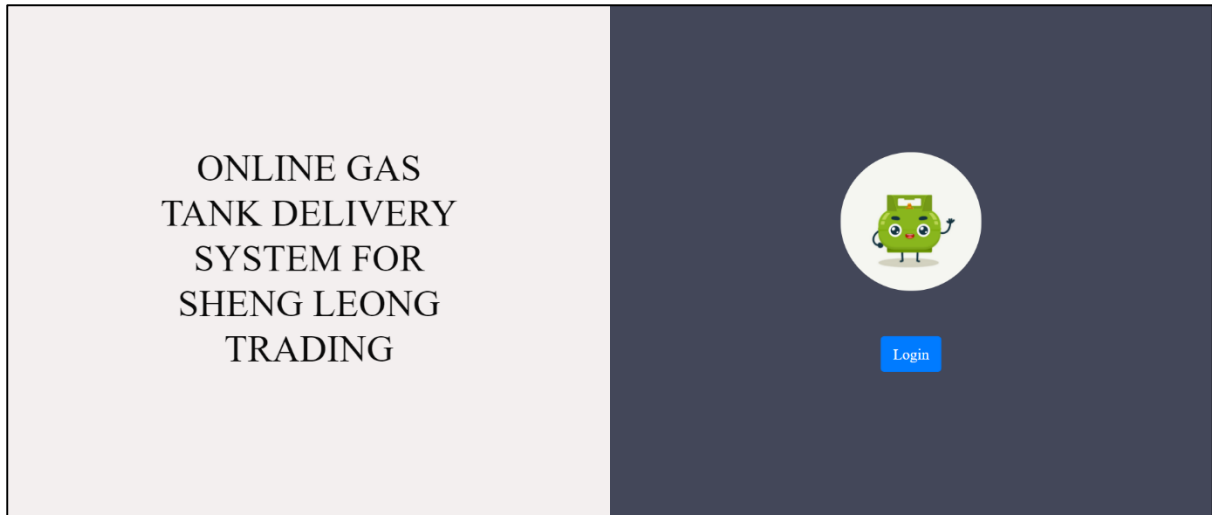


Figure 6: User Interface for Main Page

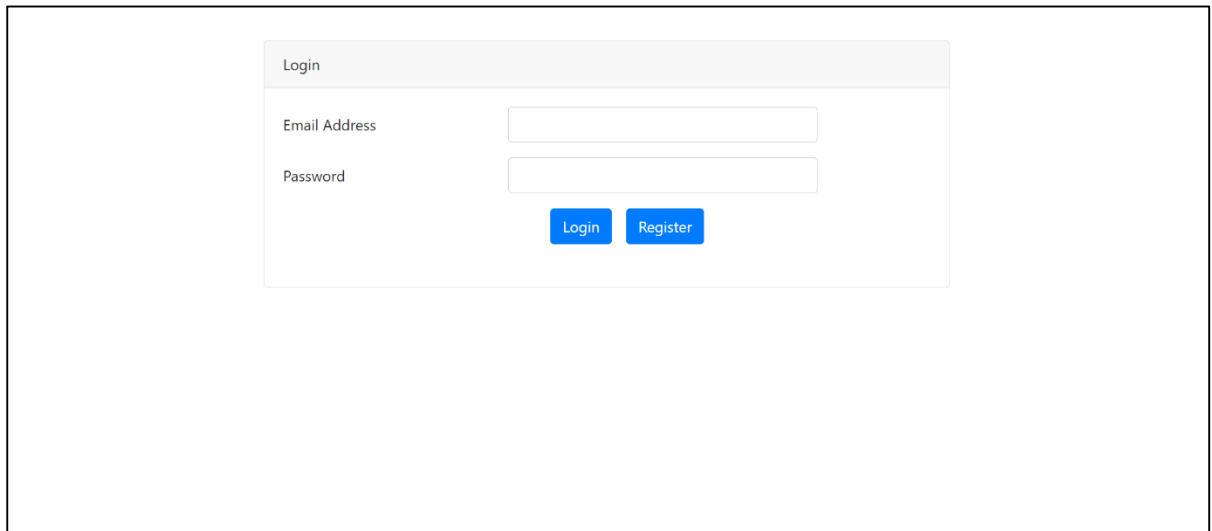


Figure 7: User Interface for Login Form

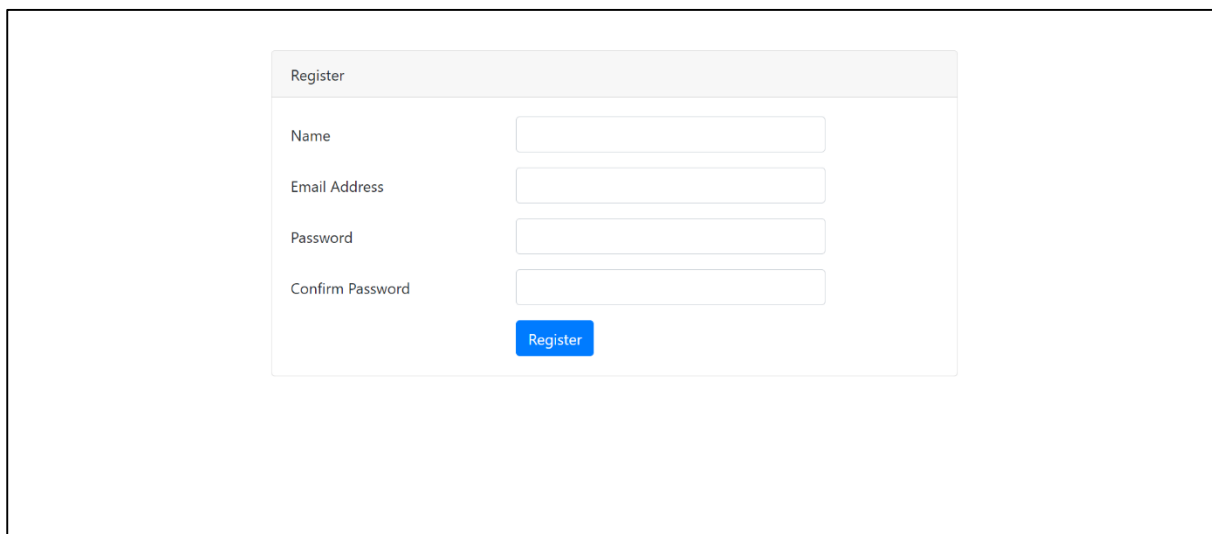


Figure 8: User Interface for Registration Page

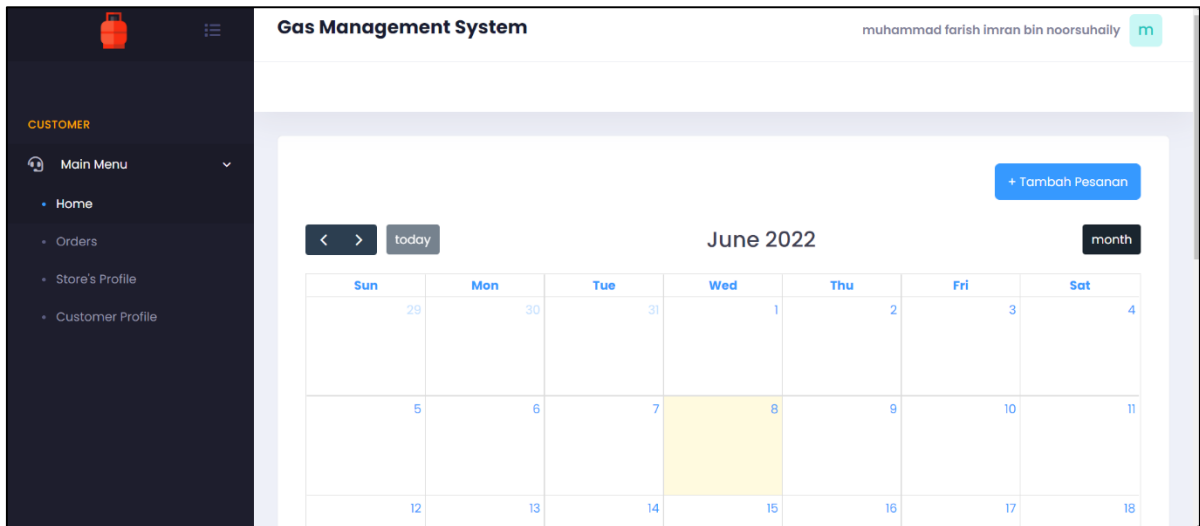


Figure 9: User Interface for Customer Order Page

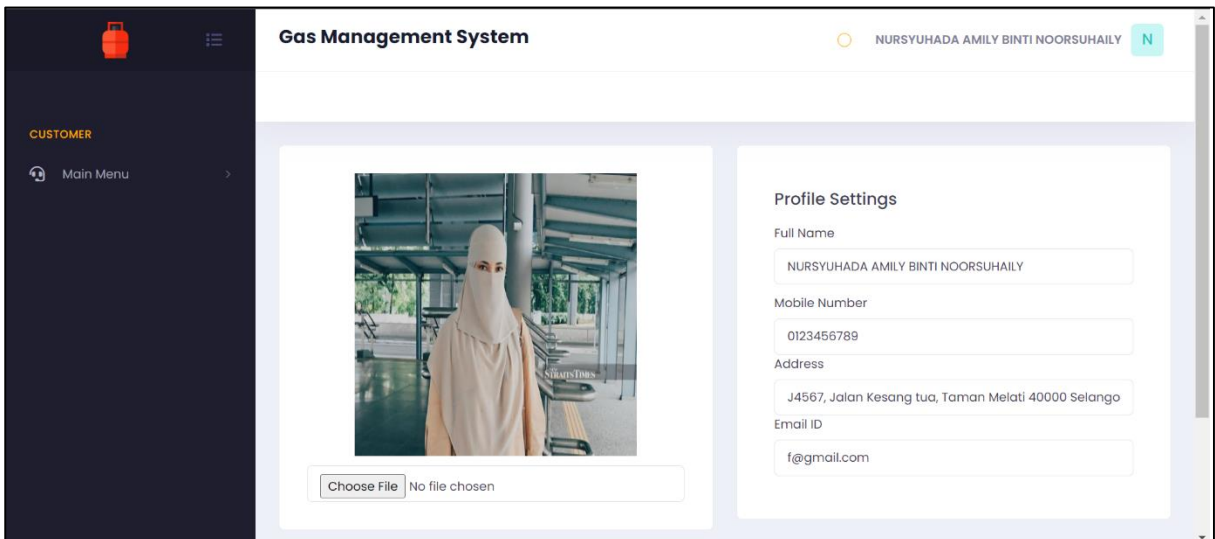


Figure 10: User Interface for Profile Page

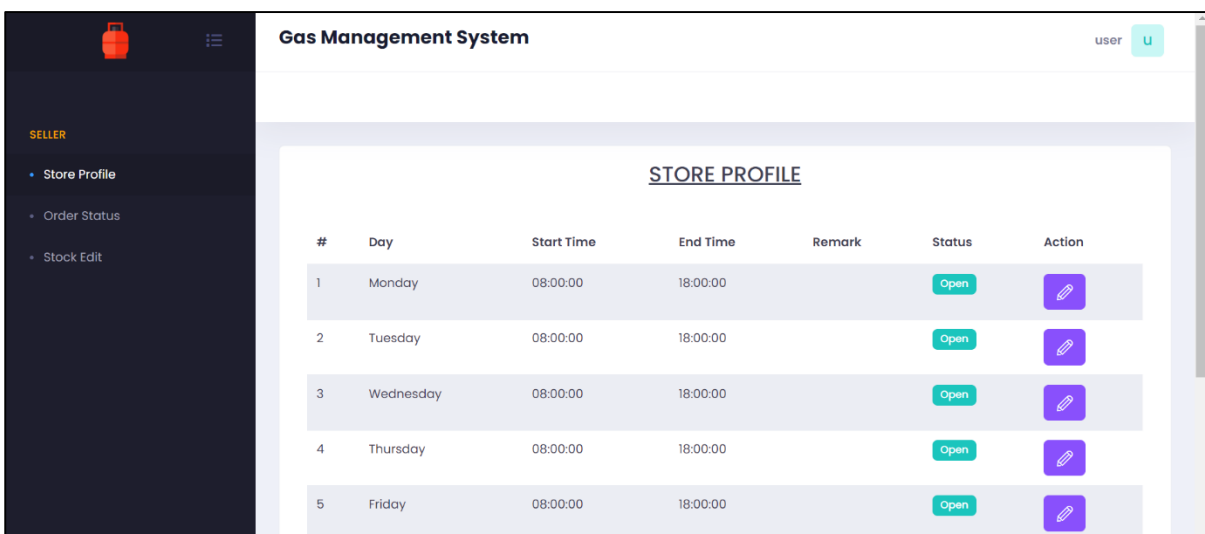


Figure 11: User Interface for Store Page

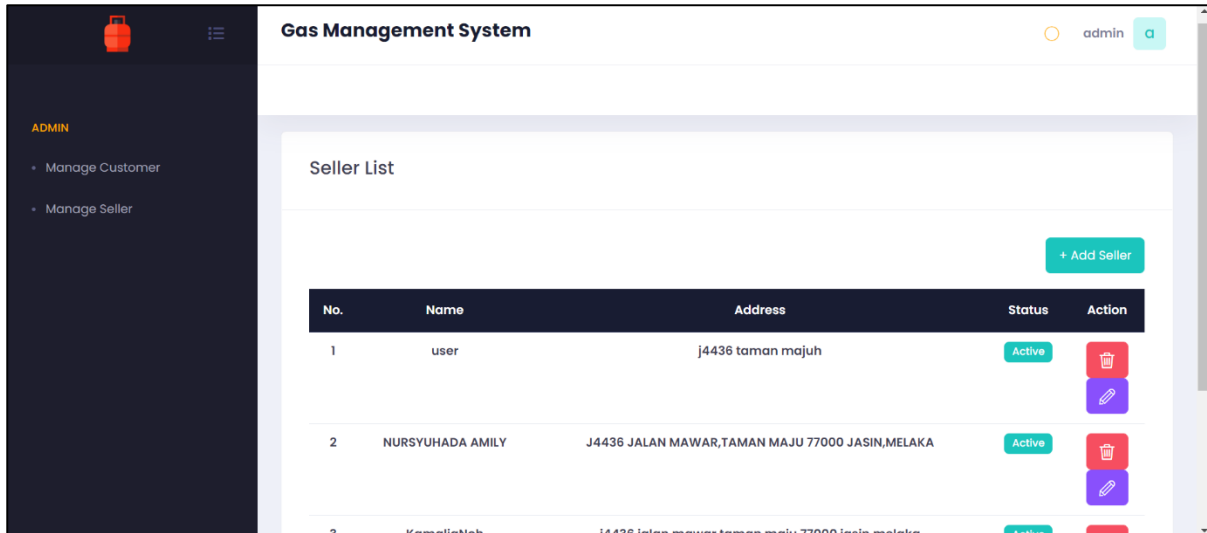


Figure 12: User Interface for Add and Remove Sellers Page

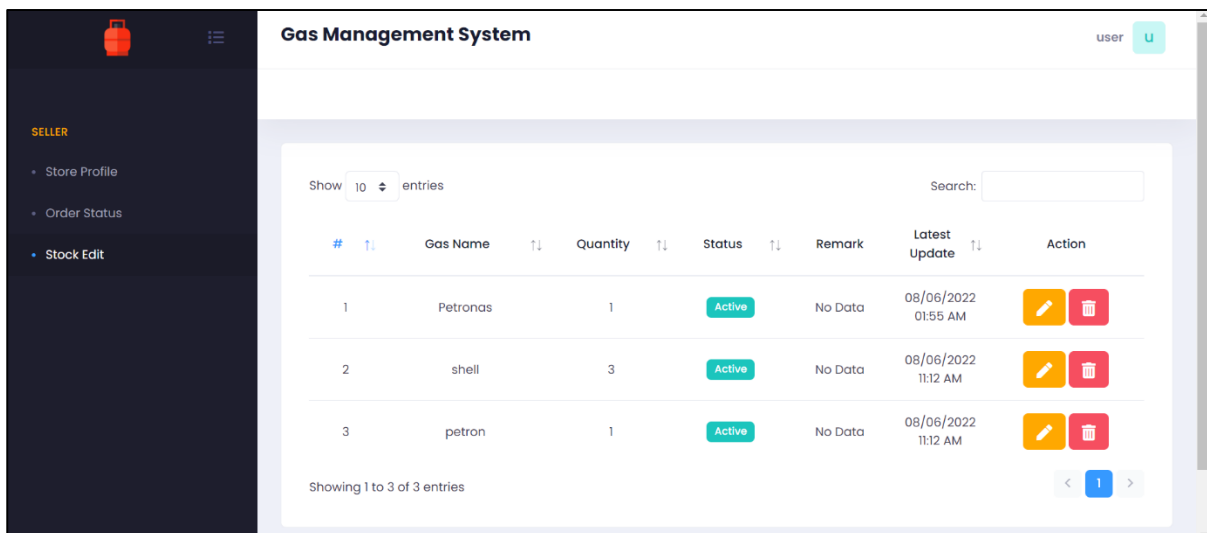


Figure 13: User Interface for Manage Stock Page

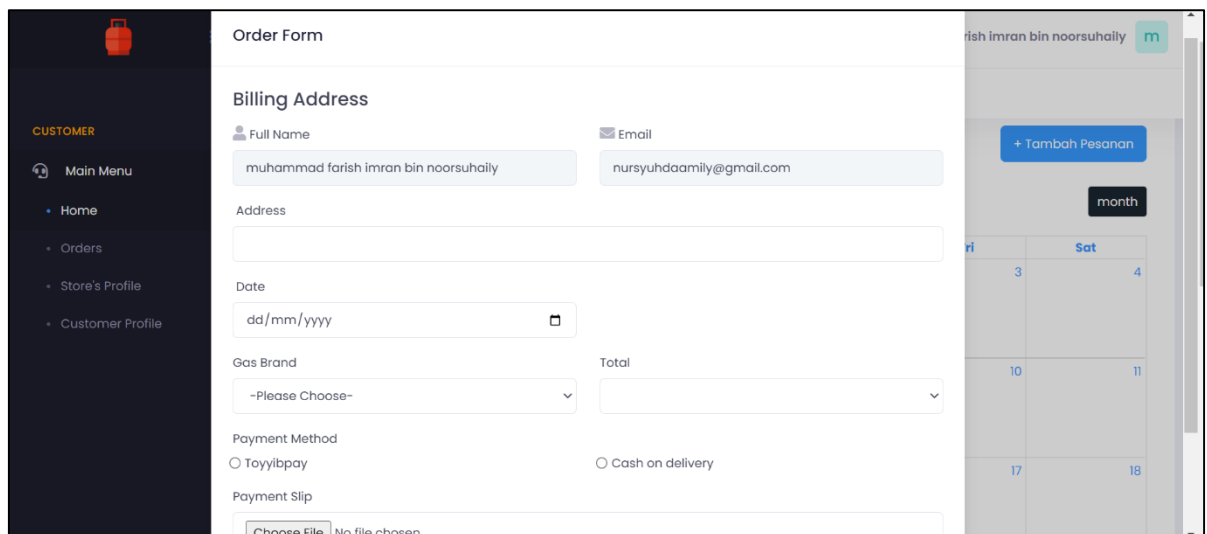


Figure 14: User Interface for Order Form

4.6 Functional System Testing

Functional system testing is being tested according to the module that has been developed such as sub modules for users, admin, and sellers which are Registration & Login Module, Order Module, Profile Module, and Store Module, Table 5 shows the results of functional system testing for every module in the developed system.

Table 5: Function Testing

No	Function	Expected Outcome	Results
1.	Registration & Login Module		
	Customers register to a new account for purchasing of the gas tank	A customer account can be created	Succeeded
	Customer logging in with the created email address and password	Customers can log in	Succeeded
	Seller logging in with the existing email address and password	Sellers can log in	Succeeded
	Admin logging in with the existing email address and password	Admin can log in	Succeeded
2.	Order Module		
	Customers create an order to purchase a gas tank by keying in their details such as name, address, order date, gas brand, and gas quantity	Customers' orders can be displayed in the calendar	Succeeded
	Seller updates the status of customers' orders via the system to notify the customers regarding the orders they have made	Updated order status can be displayed on customers' order status page	Succeeded
3.	Profile Module		
	Customer update their profile by entering their details including profile picture	Updated customers profile is being displayed	Succeeded
4.	Store Module		
	Sellers customize the operating hours of the store to make sure that their customers are aware of the availability of the store on a certain day	Updated store operating hours can be seen on the customer's store page	Succeeded
5.	Admin Module		
	Admin add or delete the existing sellers and customers in the system	The updated list of customers and sellers is being displayed	Succeeded
6.	Payment Module		
	Customers select payment methods either by payment gateway or cash on delivery	Payment can be made by the customers	Succeeded
7.	Stock Module		
	Seller customizes the quantity of the gas tank	New stock quantities are being displayed on the customer ordering page	Failed

5. Conclusion

In conclusion, Online Gas Tank Delivery System for Sheng Leong Trading is a web-based system where it is developed for customers who wants to purchase gas tanks online. This project is in the development process and needs to be completed within the timeline. The outcome of the project is well-functioning and eases the users of the grocery store to manage and purchase the gas tank.

Acknowledgment

The authors would like to thank the Faculty of Computer Science and Information Technology, Universiti Tun Hussein Onn Malaysia for its support.

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