Applied Information Technology And Computer Science Vol. 2 No. 2 (2021) 823-838

AITCS

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

Development of My Toy House Online Ordering System for My Toy House Online Store

Tai Sing Yong, Puan Ruhaya Ab.Aziz*

Faculty of Computer Science and Information Technology,
University Tun Hussein Onn Malaysia, 86400 Batu Pahat, Johor, MALAYSIA

DOI: https://doi.org/10.30880/aitcs.2021.02.02.053
Received 9 July 2021; Accepted 31 October 2021; Available online 30 November 2021

Abstract: For the present generation where almost everyone has a smartphone with them, online shopping has become a trend, as more peoples prefer to purchase products online. In order to cope with it, an e-commerce system which is My Toy House Online Ordering System has been decided to be developed for My Toy House Online Store. A traditional way of recording which a manual filing system is currently used by the store owner and this has slowed down the product managing process. Other than that, delay of communication is also one of the problem faced. Extra charges for each transaction carried out is also a problem faced by the store owner. The system is developed by using object-oriented approach and the information required is gathered by using two data gathering method which is interview and observation. The system offers services such as stock management and online selling products. For management, the system shall allow the user to manage the stock information such as quantity, price and name while for online business, the system shall allow the user to view the products details, manage account and search product. With the implementation of the system, the usage of the paper can be reduced as record is kept using the system. Other than that, the system allows easy management and increase the interest of the client as it does not require extra charges for each transaction.

Keywords: e-commerce, manual filing system, object-oriented. online ordering system

1. Introduction

As a type of e-commerce business, online ordering system is a system that involved in the transactions between the seller and buyer with the help of Internet connection [1]. Online ordering system can be used in different fields as long as online transactions is required and the terms and conditions is fulfilled.

In this project, a business – to – consumer (B2C) system is designed as it is used for online transactions between a company and its customers [2]. This online ordering system is going to provide a platform for the customers to view and purchase the items they wished to buy and also a function that allows the store owner to manage the stock.

*Corresponding author: ruhaya@uthm.edu.my

My Toy House Online Store is an online store that started to run since year 2019 by the current owner, Mr. Tai Sing Wee. There is a various type of products sold by the store including smartphone casing and plastic figurine. In the beginning, the owner started this business by considering it as a source of side incomes for him but he decided to make it as his main career after he resigned from his previous work which is working as a lab assistant of a private secondary school in Malacca.

Currently, the store owner is selling the products on a third party system such as Shopee and Facebook. For stock recording, the owner is recording the stocks information such as stock model, quantity, coming prices and other details in a records book.

With the current operating process, a few problems existed and have caused trouble to the owner. One of the problems faced is the difficulty in managing the stock records. Since the owner is now recording the stock manually in a records book, there may be some situation such as the owner is hard to find a stocks records from all of the records book as the number of record books is increasing as more stocks coming.

Another problem faced by the owner is the communication problem regarding the payment for the products as the process involved the owner, buyer and Shopee admin. This has caused some problems to occur between the owner and the buyer.

With the implementation of the online ordering system, it is able to help the store's owner to manage their stocks in a proper way. By using the system, the owner is able to record the details of the products in the system and the problem faced can be solved.

Another aim of designing the online ordering system is to help the store's owner to manage online ordering process of the products of the online toy store, My Toy House. With the help of the system, the members are able to leave a comment for each products and the comment can be viewed by other member and customer. The admin can also view the comment and make some improvement according to the comment. Other than that, the customers are able to enjoy special discount after registered as a member of the system.

2. Related Work

2.1 Online Ordering System

An online ordering system is a system that is run using the concept of E-commerce which is a process of selling and buying products through an online network [3]. With an online ordering system, the merchants will not have to own or rent a physical store in order to sell their products. The types of products are not limited for the online store, the merchant can sell different types of products as long as they are able to obtain the stock of products.

2.2 System Architecture

As for architecture, there is an architecture named SmartSocialMarket architecture that is suitable to be used as a self-hosted online ordering system architecture [4]. SmartSocialMarket architecture will divide the system into two big parts, which is the e-commerce management and the social relationship management. From this architecture, an architecture which the use cases divided into two major parts which are user part and admin part has been created. Further information regarding the system architecture will be discussed in Section 4.3.

2.3 Comparison between the existing systems and proposed system

The table below will show the different between the three existing system and the proposed system. The first column of the table will be showing the features that will be compared between the four system while the first row stated the system to be compared.

Table 1: Comparison between the existing systems and proposed system

Systems / Features	Shopee [5]	Online Shopping System Based on B/S Model [6]	Shopin Online Shopping Cart	Proposed System
Registration	Yes	Yes	Yes	Yes
Search products	Yes	Yes	Yes	Yes
Stock record management	N/A	N/A	N/A	Yes
Payment status	Updated by Shopee admin	Not shown	N/A	Checked by store owner
Special offer	Special promos provided by the Shopee.	Set by owner	N/A	Membership Point System
Communication	Through Shopee	Comment System	N/A	Comment System
Generate report	N/A	Yes	N/A	Yes

3. Methodology

The software process model used in the development of the proposed system is prototyping model. For data gathering, two methods have been used which is observation and interview.

3.1 Prototyping Model

In prototyping model, a prototype which is a simplified version of the system is being developed by performing the analysis, design, and implementation phases simultaneously. The purpose of creating a system prototype is to allow users to evaluate and provides feedback. According to the feedbacks, the developers will reanalyze, redesign and re-implement a second prototype that corrected the problems existed [7]. This process will continue until the users approved that it meets the requirements and is ready to be used.

The prototyping model can be separated into six phases which are planning, analysis, design, prototype implementation, user evaluation and system implementation. For analysis, design and prototype implementation, these three phases will be carried out at the same time in order to quicken the process of prototype development. Figure 1 illustrates the process of the prototyping model and Table 2 will show the working details of each phases.

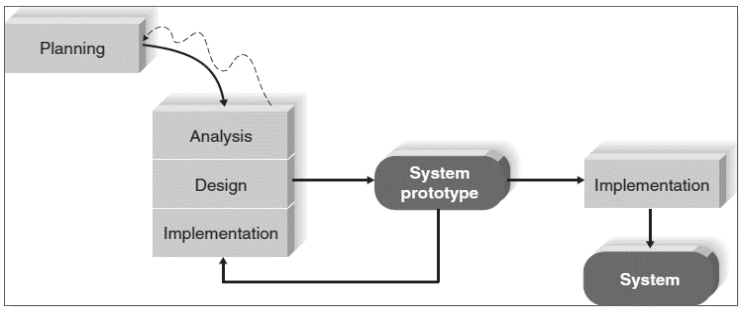


Figure 1: System Prototyping Process [7]

Table 2: Details of each phases

Phases	Actions	Products
Planning	- Decide title - Prepare proposal - Prepare schedule - Title defense	i) Project proposal ii) Gantt Chart
Requirements gathering and analysis	- Study existing system - Gather information for the project through interview and observation. - Analyze information gathered. - Define requirements.	i) Literature review ii) System requirements iii) Activity Diagram iv) Sequence Diagram v) Class Diagram
Design	- Design system interface - Design system database	i) System interface design ii) System database design
Prototype implementation	- Develop system prototype.	i) System prototype
User evaluation	- Conduct system prototype Testing	i) Testing report
Implement and deployment	- Implement the final system	i) Complete system

3.2 Project Planning

Project planning involved every aspect that may affect the result of the project. In this section, the method of obtaining information required and the Gantt chart of completing the project will be discussed.

3.2.1 Interview

In order to obtain information from the store's owner, an interview sections will be performed between the store's owner and the developers. There are three types of interview which is structured, semi-structured and unstructured [8]. In this project, the type of interview chosen is semi-structured interviews. It consists of several questions that help in guiding the interviewee about the range of the questions to be asked but also provides the chances for the interviewee to elaborate their ideas in details. With this approach, it is able to discover some important information that might have been missed out by the developers.

3.2.2 Observation

Observation is a method that allow a person to obtain information from the surrounding though senses [9]. In order to perform a useful observation, the observer must be selective. The observer should plan carefully about the target to be observe before taking action.

In this project, the developer performed the observation by applying the observer as participant stance. In this stance, the developer is involved in the process of the company but not as a member of the company.

The developer has been involved in the stock managing process of the store and also the packing process of the products sold. During the process, the information needed to be recorded by the system will be found and it will make the process of creating the products table in the database become easier. By involving directly in the process, the developer is able to make consideration for the system from the client perspective.

4. Results and Discussion

The results of the analysis of the study is represented using a few type of UML diagrams while the discussion will be discussing the advantages of the system.

4.1 Use Case Diagram

Use case is used to show the interaction that carried out by the system and also the actors that involved in the interaction. The use cases will be documented by turning it into a high-level use case diagram [10]. Each use case in the diagram shows the function that can be carried out by the system as well as the actors which is the stakeholders of the system that used the functions. The use case diagram of the proposed system will be shown in Figure 2.

Figure 2: Use Case Diagram of the Proposed System.

4.2 Use Case Specification

Use case diagram can only show an overview or the system requirements. In order to have a clearer image of the system requirements, use case specification is required. A use case specification contained the description of each use case such as the input-output process and alternative flows in details [11].

4.3 System Architecture

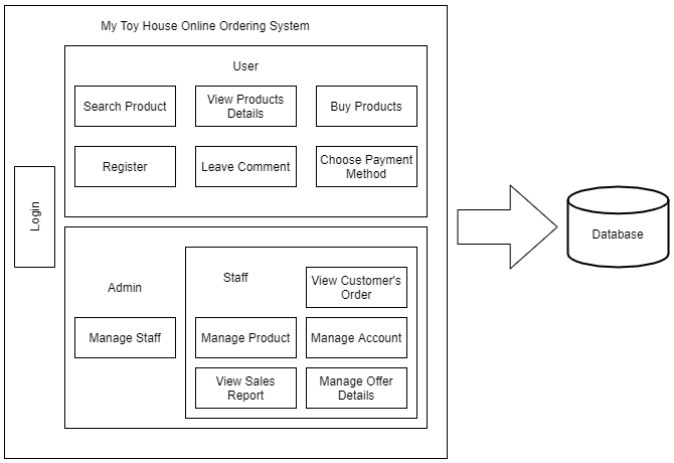


Figure 3: System architecture for the proposed system

Figure 3 show the architecture of the proposed system. The use cases of the system can be separate into two big parts which is user part and admin part. The user part will consist of modules search product, view product details, buy product, register, provide feedback and choose payment method. For admin, the use cases involved is view customer's order, manage product, manage account, view sales report and manage offer details. There is one use case that involved in both parts which is the login use case. All of the information obtained from the use cases stated will be stored in a database for further use.

4.4 Database Design

In this section, the class diagram of the system will be presented and the data dictionary of each table of the database will be discussed as well. Inside the class diagram, the relationship between each entity is clearly shown. The class diagram of the system is illustrated in Figure 4 and a few important tables in the database is listed below as Table 3, Table 4, Table 5, Table 6, Table 7, Table 8 and Table 9.

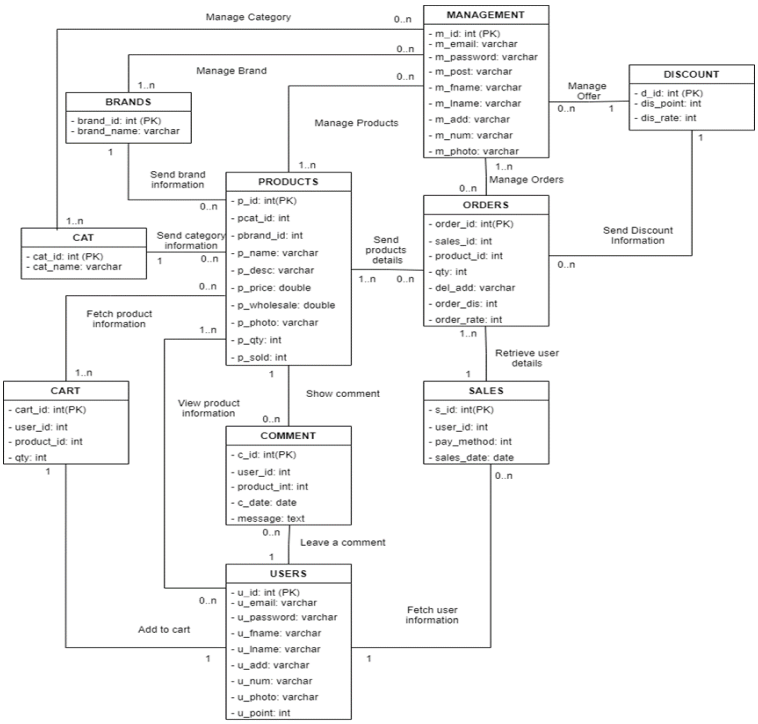


Figure 4: Class Diagram of the Proposed System.

Table 3: cart Table

Field	Data Type	Size	Key	Description
cart_id	int	11	Primary	Id for the carts.
user_id	int	11		Id of the user of the cart.
product_id	int	11		Id of products in the cart.
qty	int	11		Quantity of each product in the cart.

Table 4: comment Table

Field	Data Type	Size	Key	Description
c_id	int	11	Primary	Id of the comments recorded.
user_id	int	11		Id of the user that leave the comment.
product_id	int	11		Id of the products receiving the comment.
c_date	date	-		Date of the comment received.
message	text	-		Content of the comments.

Table 5: discount Table

Field	Data Type	Size	Key	Description
d_id	int	11	Primary	Id of the discount condition.
dis_point	int	11		Point required for each discount.
dis_rate	int	11		Rate of discount.

Table 6: management Table

Field	Data Type	Size	Key	Description
m_id	int	11	Primary	Id of the store owner and staff.
m_email	varchar	100		Email of the store owner and staff.
m_password	varchar	20		Password of each account.
m_post	varchar	10		Position of the account owner.
m_fname	varchar	20		First name of the account owner.
m_lname	varchar	20		Last name of the account owner.
m_add	varchar	100		Address of the account owner.
m_num	varchar	13		Contact number of the account owner.
m_photo	varchar	100		Name of profile picture of the account.

Table 7: orders Table

Field	Data Type	Size	Key	Description
order_id	int	11	Primary	Id of the orders made.
sales_id	int	11		Sales id of the orders made.
product_id	int	11		Products id of products in the orders.
qty	int	11		Quantity of products ordered.
del_add	varchar	50		Delivery address of the order.
order_dis	int	11		Status of order applied. (0 = no discount, 1 = discount applied)
order_rate	int	11		Percentage of discount applied.

Table 8: products Table

Field	Data Type	Size	Key	Description
p_id	int	11	Primary	Id of each products.
pcat_id	int	11		Id of product category.
pbrand_id	int	11		Id of product brand.
p_name	varchar	100		Name of product.
p_desc	varchar	100		Product description.
p_price	double	-		Selling price of the product.
p_wholesale	double	-		Wholesale price of the product.
p_photo	varchar	50		Photo of the product.
p_qty	int	11		Stock quantity of the product.
p_sold	int	11		Quantity sold of the product.

Table 9: users Table

Field	Data Type	Size	Key	Description
u_id	int	11	Primary	Id of the user.
u_email	varchar	100		Email of the user.
u_password	varchar	20		Password of the account.
u_fname	varchar	50		First name of the user.
u_lname	varchar	50		Last name of the user.
u_add	varchar	200		Address of the user.
u_num	varchar	13		Contact number of the user.
u_photo	varchar	100		Name of profile picture of the user.
u_point	int	11		Member point of the user.

4.5 Implementation

In the implementation phase of My Toy House online ordering system, the source code has been generated based on the output of the previous phase which is analysis and design phase. In this section, the implementation of each module source code will be explained along with the output of the source code.

4.5.1 Manage Customers Information Module

Manage customers information module is a module that helps in managing the customers information. It consists of two main functions which are register account and login with the account registered.

4.5.2 Manage Products Information Module

Manage products information module is a module that helps the admin and staff to manage the products to be sold. It consists of three main functions which are add, edit and delete functions. This functions can only be carry out when the user login with the admin or staff account.

4.5.3 Membership Point System Module

Membership point system module is a module that allow the customers to enjoy discount by spending their member point. In this module, the admin and staff are able to manage the discount details such as setting the point required and discount percentage for each orders while the users are able to view their member point and enjoy the discount by using their member point.

4.5.4 Search Product Module

Search product module is a module that allow the customers to search for a product. In this module, the customer will have to enter the keyword to search into the search bar and press 'enter'. After that, the system will fetch the product with the name contained the keyword for the customers. By clicking the product, the customer will be redirect to the product page and the information of the product will be displayed.

4.5.5 Manage Sales Module

Manage sales module is a module that allow the admin and staff to view the sales records. When the user login as admin or staff, the user will be redirect to the admin or staff main page. Admin and staff will be able to view the sales list by clicking the 'sales' button at the navigation bar. In the sales page, the sales list will be display and the admin and staff can view the sales details by clicking the 'details' button at the end of each row. Other than that, the system will generate the sales report that contains the sales date and amount of each sales after the admin and staff click the 'print' button on the top right corner.

4.5.6 Choose Payment Method Module

Choose payment method module is a module that allow the customers to choose the payment method. This module triggered after the user click the 'checkout' or 'checkout with discount' buttons in the cart page. It will display the checkout modal to the customers so that the customers can check the information such as name, address and total amount. In the modal, the customer can choose the payment methods which are cash on delivery or online banking after checking the information.

4.5.7 Comment Module

Comment module is a module that allow the customers to leave a comment for each products. The customers can only leave comment after logging in to the system as a user. The user will have to type their comment towards the product into the comment box at the bottom of the product page and click the 'add comment' button.

4.6 Testing

4.6.1 System Testing

In order to check that whether the developed system meet the functional and non-functional requirements, a system testing is required to be carried out [12]. The target to be tested by the tester is a complete system so that its specified features can be evaluated. System testing is completed when all of the modules can be worked as a single application. The results of test cases of some requirements is presented in the tables below.

4.6.1.1 Test Case Register Account and Login with Account (STD_TEST_100)

Table 10: Test Case Register Account and Login with Account

Test Case ID	Requirement	Description	Result
STD_TEST_100_001	REQ_101	The system shall be able to show register form for customer.	PASS
STD_TEST_100_002	REQ_102	The system shall be able to save the detail entered by the user.	PASS
STD_TEST_100_003	REQ_103	The system shall be able to show login form for the user.	PASS
STD_TEST_100_004	REQ_104	The system shall be able to verify the email and password entered.	PASS

Table 11: Test Case Register Account and Login with Account

Test Case ID	Event	Expected Result	Result
STD_TEST_100_001	User clicks the 'SIGNUP' button on the navigation bar.	The user will be redirect to the register page.	PASS
STD_TEST_100_002	User sign up for an account.	user will be able to see the information entered at the profile page.	PASS
STD_TEST_100_003	User clicks the 'LOGIN' button on the navigation bar.	The user will be redirect to the login page.	PASS
STD_TEST_100_004	User enters the valid set of email and password to the login form and click the 'sign in' button.	The user will be redirect to the customer main page with the account information fetched.	PASS

4.6.1.2 Test Case Manage Products (STD_TEST_200)

Table 12: Test Case Manage Products

Test Case ID	Requirement	Description	Result
STD_TEST_200_001	REQ_201	The system shall be able to show the product list to the admin and staff.	PASS
STD_TEST_200_002	REQ_202	The system shall allow the admin and staff to add new product to the product list.	PASS
STD_TEST_200_003	REQ_203	The system shall allow the admin and staff to delete product from the product list.	PASS
STD_TEST_200_004	REQ_204	The system shall allow the admin and staff to edit the product information in the product list.	PASS

Table 13: Test Case Manage Products

Test Case ID	Event	Expected Result	Result
STD_TEST_200_001	User click the 'products list' button at the navigation bar.	The user will be redirect to the admin product page and a list of the products will be displayed.	PASS
STD_TEST_200_002	User click the 'New' button at the product page and fill in the required information.	The newly added product will be shown in the product list.	PASS
STD_TEST_200_003	User click the 'Delete' button at the end of the product row and click the 'Delete' button in the delete modal.	The selected product will be removed from the product list.	PASS
STD_TEST_200_004	User click the 'Edit' button at the end of the product row and fill in the information to be changed.	The information showed in the product list will be updated.	PASS

4.6.1.3 Test Case Manage Sales (STD_TEST_300)

Table 14: Test Case Manage Sales

Test Case ID	Requirement	Description	Result
STD_TEST_300_001	REQ_301	The system shall be able to display the sales list and sales details to the admin and staff.	PASS
STD_TEST_300_002	REQ_302	The system shall be able to generate the sales report for the admin and staff.	PASS
STD_TEST_300_003	REQ_303	The system shall be able to record the product added to the cart by the customer.	PASS
STD_TEST_300_004	REQ_304	The system shall allow the customer to manage the cart by removing or editing the quantity of the product..	PASS
STD_TEST_300_005	REQ_305	The system shall be able to record the details into the order list from the user's cart after the user checked out.	PASS

Table 15: Test Case Manage Sales

Test Case ID	Event	Expected Result	Result
STD_TEST_300_001	User visit the sales page and click the 'view' button at the end of the sales row.	The user will be able to view the sales list and sales records including the buyer's name, information and quantity of the products bought.	PASS
STD_TEST_300_002	User choose the date range and click the 'print' button at the top right corner of the sales page.	The user will be able to receive a sales report according to the date range chose.	PASS
STD_TEST_300_003	User click the 'add to cart' button at the customer product page.	The products chosen will be add to the cart.	PASS
STD_TEST_300_004	User visit the cart page and manage the product quantity in the cart.	The quantity of the product will be changed and the product will be removed from the cart if the quantity become 0.	PASS
STD_TEST_300_005	User click the 'checkout' button at the cart page.	The order will be added to the admin and staff sales page.	PASS

4.6.1.4 Test Case Manage Staffs (STD_TEST_600)

Table 16: Test Case Manage Staffs

Test Case ID	Requirement	Description	Result
STD_TEST_500_001	REQ_601	The system shall be able to show the staff list to the admin.	PASS
STD_TEST_500_002	REQ_602	The system shall allow the admin to add new staff to the staff list.	PASS
STD_TEST_500_003	REQ_603	The system shall allow the admin to delete staff from the staff list.	PASS

Table 16: (cont.)

Test Case ID	Requirement	Description	Result
STD_TEST_500_004	REQ_604	The system shall allow the admin to edit the staff information in the staff list.	PASS

Table 17: Test Case Manage Staffs

Test Case ID	Event	Expected Result	Result
STD_TEST_500_001	User click the 'staffs' button at the navigation bar..	The user will be redirect to the staffs page and a list of the staffs will be displayed.	PASS
STD_TEST_500_002	User click the 'New' button at the staffs page and fill in the required information.	The information of the new staff will be shown in the staff list.	PASS
STD_TEST_500_003	User click the 'Delete' button at the end of the staff row and click the 'Delete' button in the delete modal.	The selected staff will be removed from the staff list.	PASS
STD_TEST_500_004	User click the 'Edit' button at the end of the staff row and fill in the information to be changed.	The information showed in the staff list will be updated.	PASS

4.6.1.5 Test Case Search and View Product Details (STD_TEST_600)

Table 18: Test Case Search and View Product Details

Test Case ID	Requirement	Description	Result
STD_TEST_600_001	REQ_601	The system shall be able to display the product list of product related to the keyword entered..	PASS
STD_TEST_600_002	REQ_602	The system shall be able to display the product information to the customer.	PASS

Table 19: Test Case Search and View Product Details

Test Case ID	Event	Expected Result	Result
STD_TEST_600_001	User enter the keyword into the search bar and press 'enter'.	The user will be redirect to the search page and the system will show the products with the name contained the keyword.	PASS
STD_TEST_600_002	User click a product from the list.	The user will be redirect to the product page and the information of the chosen product will be displayed to the user.	PASS

4.6.1.6 Test Case Choose Payment Method (STD_TEST_800)

Table 20: Test Case Choose Payment Method

Test Case ID	Requirement	Description	Result
STD_TEST_800_001	REQ_801	The system shall allow the customer to choose payment method when checkout.	PASS
STD_TEST_800_002	REQ_802	The system shall allow the customer to enjoy discount if the customer meet the discount requirement set by the owner.	PASS

Table 21: Test Case Choose Payment Method

Test Case ID	Event	Expected Result	Result
STD_TEST_800_001	User click the 'checkout' button and 'checkout with discount' button at the cart page.	The user will be able to choose the payment methods which are cash on delivery and online banking	PASS
STD_TEST_800_002	User click the 'checkout with discount' button.	The user will be able to see the amount after discount if the user meet the discount condition.	PASS

4.6.2 Overall Test Result

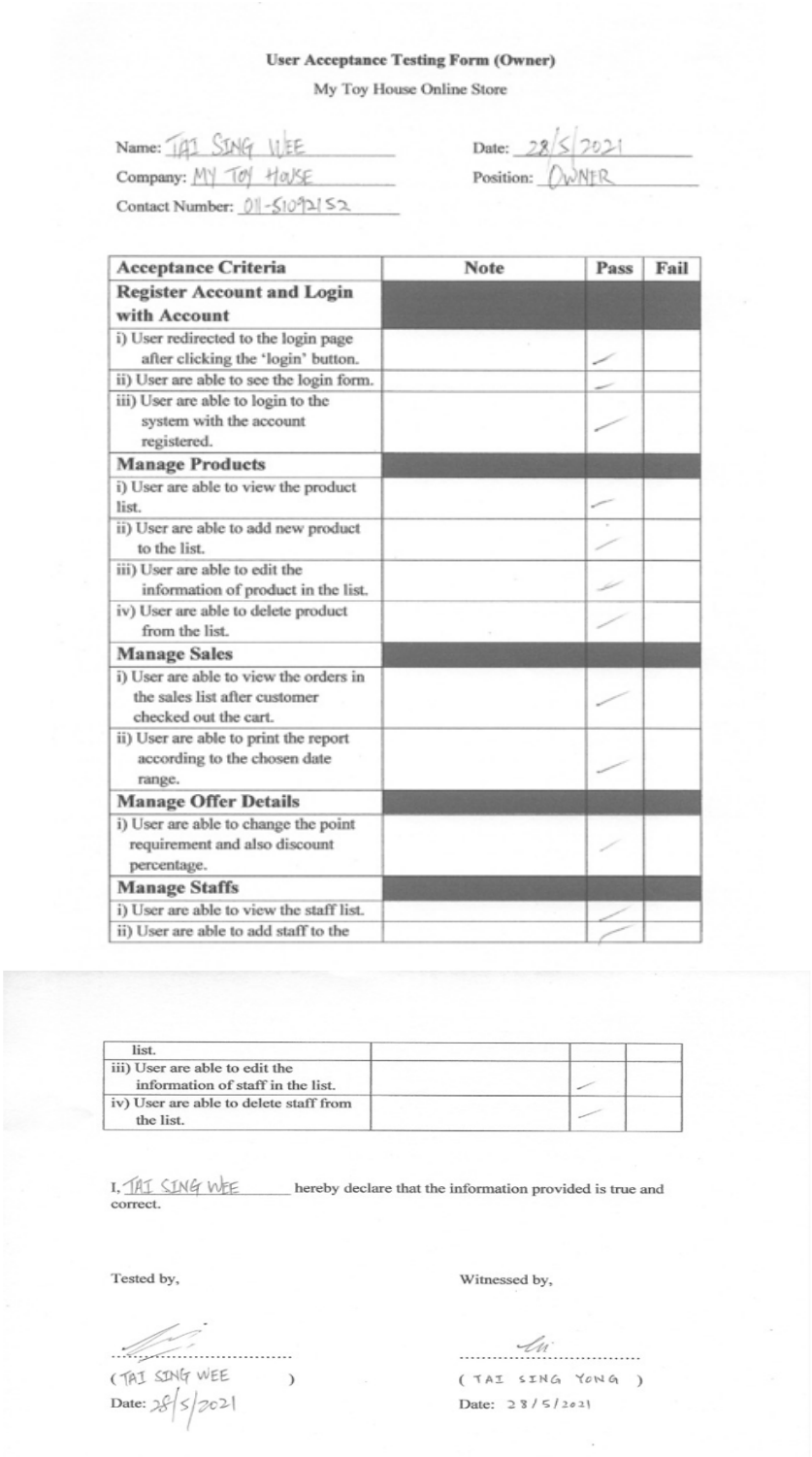
In the testing phase, 24 test cases has been carried out in order to test the system. The system successfully fulfilled all the requirements in each test cases. The overall result is shown in Table 15.

Table 22: Overall result of testing phase.

Test Case	Total Test Cases	Total Passes	Total Fails
STD_TEST_100	4	4	-
STD_TEST_200	4	4	-
STD_TEST_300	5	5	-
STD_TEST_400	1	1	-
STD_TEST_500	4	4	-
STD_TEST_600	2	2	-
STD_TEST_700	2	2	-
STD_TEST_800	2	2	-
Total	24	24	-

4.7 User Acceptance Testing

The main purpose for user acceptance testing is to gather information from the users who will be using the system to complete a specified task. In this project, the tester decided for the user acceptance testing is the owner and the staff of the store. A simple form has been prepared for the store owner and staff to fill in after the testing the system. The result of the store owner user acceptance testing is shown in Figure 5.



User Acceptance Testing Form (Owner)

My Toy House Online Store

Name: TAI SING WEE Date: 28/5/2021

Company: MY TOY HOUSE Position: OWNER

Contact Number: 011-51092152

Acceptance Criteria	Note	Pass	Fail
Register Account and Login with Account			
i) User redirected to the login page after clicking the 'login' button.		✓	
ii) User are able to see the login form.		✓	
iii) User are able to login to the system with the account registered.		✓	
Manage Products			
i) User are able to view the product list.		✓	
ii) User are able to add new product to the list.		✓	
iii) User are able to edit the information of product in the list.		✓	
iv) User are able to delete product from the list.		✓	
Manage Sales			
i) User are able to view the orders in the sales list after customer checked out the cart.		✓	
ii) User are able to print the report according to the chosen date range.		✓	
Manage Offer Details			
i) User are able to change the point requirement and also discount percentage.		✓	
Manage Staffs			
i) User are able to view the staff list.		✓	
ii) User are able to add staff to the list.		✓	
iii) User are able to edit the information of staff in the list.		✓	
iv) User are able to delete staff from the list.		✓	

I, TAI SING WEE hereby declare that the information provided is true and correct.

Tested by,

(TAI SING WEE)

Date: 28/5/2021

Witnessed by,

(TAI SING YONG)

Date: 28/5/2021

Figure 5: User Acceptance Testing Result.

4.8 Discussion

The online ordering system is suitable to be used by an online store as it brought a lot of benefits to an online store. It can store the information of the customers, stocks and order list. The store owner is able to manage the stocks in a better way and the records is less likely to be damaged. By using the system, the owner will not be charged for the transactions and this helps in increasing the profits of the owner. The owner can also manage the products details easily such as adding, deleting and updating the information.

Online ordering system also provided convenience for the customer as they do not have to go to a physical store to buy the products they want. This help in saving their time especially for those who have a packed time table. The system also allows them to manage their account by updating their personal information at any time. The total price of the purchased will be calculated directly by the system so that problems such as miscalculation can be avoided.

5. Conclusion

The main outcome of this project is the system My Toy House Online Ordering System. It is now a fully functional system that can be accessed by anyone with the address link of the system. The objectives of this project is successfully achieved. The main problems faced by the store owner which are managing stock records and extra charges has been solved by this system. The system is able to manage the stocks record neatly so that the owner can view the record anytime and the system does not have any extra charges for the transaction carried out.

Although all of the objectives has been achieved, there are still some limitations for the system. One of the limitation is that the system interface design is quite simple which causing it to be less attractive for the customers to visit the website. Other than that, the system only available in English Language which may cause some trouble to the customers who are less fluent in English. Lastly, there is no page for displaying all products in a page for the customers.

In order to overcome the limitation of the system, some future works is required for this system in order to make it into a better system. The improvements to be made included redesigning some interface of the system so that it can be more attractive and allow the system language to be able to choose by the user. For products, an interface to show all products at once will be added.

Acknowledgement

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

References

[1] M. Kutz, Introduction to E-Commerce, 1st ed. Denmark: Bookboon, 2016.

[2] D. L. Paris *et al*., "Business-to-customer (B2C) Electronic Commerce: An implementation process view," 3rd International Conference On Computer And Information Sciences (ICCOINS), 2016, doi: 10.1109/ICCOINS.2016.7783182

[3] M. S. Kabugumila *et al*., "International Journal of Business and Social Science. E-Commerce: An Overview of Adoption and Its Effective Implementation," International Journal of Business and Social Science, vol. 7, no. 4, April 2016. [Online]. Available: http://www.ijbssnet.com/ journals/ Vol_7_ No_4_April_2016 /27.pdf. [Accessed Nov. 17, 2020].

[4] L. Salvatori and F. Marcantoni, "SmartSocialMarket: A Social Commerce Architecture," The Third International Conference on Building and Exploring Web Based Environments, 2015, doi: 10.13140/RG.2.1.4722.4404

[5] Ayudhitama. A. P and Pujianto. U, "Analisa kualitas dan usability berdasarkan persepsi pada website shopee," 2020, doi: 10.33795/jip.v6i1.275

[6] Wei. F and Zhang. Q, "Design and Implementation of Online Shopping System Based on B/S Model," 2018, doi: 10.1051/matecconf/201824603033

[7] A. Dennis *et al*., System analysis and design, 5th ed. United States: John Wiley & Sons, Inc. 2012.

[8] P. Gill *et al*., "Methods of data collection in qualitative research: interviews and focus groups," British Dental Journal, vol 204, no. 6, March 2008, doi:10.1038/bdj.2008.192

[9] S. M. S. Kabir, Basic Guidelines for Research: An Introductory Approach for All Disciplines, 1st ed. Bangladesh: Book Zone publication. 2016.

[10] I. Sommerville, Software Engineering, 9th ed. United States of America: Person Education, Inc. 2011. [E-book] Available: 1library.

[11] P. Haumer, "Use Case-Based Software Development," IBM Rational Software, 2006. [Online]. Available: https://studylib.net/doc/8410439/use-case-based-software-development [Accesses Dec. 22, 2020].

[12] P. Mahajan, "Different Types of Testing in Software Testing," International Research Journal of Engineering and Technology (IRJET), vol. 3, no. 4, April 2016. [Online]. Available: https://www.irjet.net/archives/V3/i4/IRJET-V3I4329.pdf. [Accessed Jun. 10,2021].