

Point of Sale System for “Tempest Books”



Tempest Books
Read, Learn ,Transform

Read, Learn ,Transform

Tempest Books

L5DC SECTION (73)

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Abstract

This report is about developing a web-based system for Tempest Books shop. The system includes admin, supplier and customer side web pages. Admin can able to purchase books from registered suppliers. They can also manage books and their relative information. Customer can able to use this website and buy books from online. They can search book from the website and create account to order books. The system is developed with DSDM method and able to develop iteratively and incrementally. The document includes from acknowledgement to deployment and is clearly explained with step by step.

Acknowledgement

First of all, I would like to thanks to a founder of the book store who collaborate with me to finish this project successfully till the end and giving the chance to develop this website. For some confidential and some registrations, store name and founder's real name cannot be described. Would like to give lots of credit to the founder, co-founder and his stuffs for explaining the detail business, daily processes and challenges patiently.

In conclusion, I would like to thanks the whole 'Tempest Books' founder, store's partners and store staffs for trusting and cooperating with me to develop the website. This is the key of this project's successful outcome.

1. Business Proposal

1.1 Overview

This project is about online book selling system of an online shop named 'Tempest Books' which currently running their daily operation both from online social media pages and from physical stores. Current selling systems are good for Myanmar market. But to expand the business and able to penetrate into high level market having a book selling website has lots of advantages for the company. First of all, get fit into the high-level market, having a website is a must standard. Second having website can give both customers, stuffs and owners many advantages. Since customers can make fast and easy orders and admins/owners can record their data and able to check at any time.

This system will be used by owners for now. It cannot be used sale stuffs or managers at this time. There will be three types of users in this system. They are customers, owners as admins, and suppliers. Although suppliers will only able to use like customers. All three roles of users will be able to create accounts and view the website. Admins will make purchase from the suppliers and add data to the website. They will able to check the orders made by customers and confirm their orders but cannot delete nor editing orders. They will also check the order history. Admins will add the available books to the website after they finished their purchasing. Customers will able to freely visit the website and make book orders using the website.

Using this website will reduce the inconveniences occurring in the manual or online systems. It will reduce workloads and can focus on customer satisfactions. Also, they will able to expand the business and website functions in future.

1.2 Current Business History

'Tempest Books' is a local bookstore established in 2020. It started as an online store and was later able to evolve into a physical bookstore which is located in Yangon, Myanmar. They target teenagers and adolescents when selling books Online, especially on Facebook. As soon as they were able to open a physical store, the store sold various types of books including diverse categories and a variety of genres. But the company still doesn't have a website. For their transaction processes to get faster and secure they will need an e-commerce bookstore. With the help of a customized bookstore, they will be able to expand their business further and will gain more trust from suppliers. Customers will be able to freely explore the store on the website conveniently.

1.3 Current Business Process

1.3.1 Registering Customers

Whenever a customer comes to the store and buys a book, the cashier will write down the customer's information (e.g. name, phone number, address) on the store's ledger and a voucher for the customer.

1.3.2 Registering Staff

Manager will take responsibility for this process. He also acts like HR of the store currently. He will collect the data of staff and report it to admins. For the improvement of staff, manager and seniors will take the responsibility.

1.3.3 Purchasing Books

The store manager will report the monthly list to the admin team before the end of every month. The admin team will make contracts with suppliers and distribute books to the store monthly. This process depends on monthly sales and will require risks, time, and responsibilities. Contacting with new suppliers will also be done by the admin team. After this process is finished, books will be distributed in the next month.

1.3.4 Customer Ordering

Customers will be able to order books from online and manually. When they order books manually, the store staff will record the order data. If they buy from social media, admins will record customer's information and order data.

1.3.5 Advertising and Promoting Books

Admins is currently responsible for this process. They will discuss before advertising or promoting. The founder will not do whether he likes to do. All the admins will talk about business strategies and will create interesting contents. After they decide tactics, advertisements or promotions will be on both social media pages and in the physical store.

1.4 Current System Issues

1.4.1 Storing Books

Time arrangement always has a problem. Reports of re-stocking books, and adding new books are the most current issues that are happening. Listing and updating best sellers, and demanded genres are also minor problems.

1.4.2 Disadvantages of paperwork

All these processes and procedures are written on paper. In this case, loss of physical documents, internal and external accidents, and security threats are critical factors to the company. The inability to save documents easily, challenges in the transportation of paperwork, and insider issues are also important factors that need to be considered.

1.4.3 Registering Customer

Manual processes are slower than using technology. Even basic office software knowledge is required using tools like Excel. Giving vouchers and receipts to customers is also slow which can cause inconvenience to them. Not only that but also saving their information will take step by step which will need more unnecessary staff just for that.

1.4.4 Shipment Problems

Whenever there is a small problem occurs in the stocking process (purchasing books), there will be a delay in shipment. Problems with customs, and delays because of transportation problems also happen sometimes.

1.4.5 Uncommon Problems

Worldwide financial problems, currency rate problems, inflations, and recessions are also problems that can affect a company's business.

1.5 Proposed System Scope

1.5.1 Filtering and editing purchase records

This system will able to filter purchase records by date, product ID and product status. The records will also able to detailed checked and printed.

1.5.2 Create and record order

Customers can easily create orders and able to check the order details before the payment stage. Those orders will be recorded and admins will able to check the customers' orders. They will also check order details too but will not able to edit them.

1.5.3 Edit and delete data

Admin will able to edit all the data that are related with the books. For example, they will edit the category, publishers, ISBN codes, authors information. They can also delete them when needed.

1.5.4 Create voucher

The system will able to create a voucher for both purchasing and ordering. So that in future, both admins and customers can confirm data.

1.5.5 Filtering and searching

Customers will able to search books by name. Or they can filter with categories, publisher, ISBN codes, or authors in respective pages. With this function can reduce time than searching books manually.

1.6 Aims and objectives

1.6.1 Aims

This system primary aim is for giving the convenience to customer. With the help of a website, customers will be able to buy books whenever they want from anywhere. Also, the website will help admins to be able to check and analyze data.

1.6.2 Objectives

Current business history	1 day
Current business process	1 day
Current business issues	1 day
Proposed system scope	1 day
Aims and objectives	1 day
Estimate cost	1 day
Project plan	2 days

Analysis

Gather information (from interviews)	4 days
SWOT analysis	2 days
Functional comparison	2 days
Non-functional comparison	2 days

Feasibility Study

Defining software development methodologies	1 day
Choosing programming languages	1 day
Choosing database	1 day
Possible LESPI	1 day

Foundation

Define functional requirements	1 day
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Define non-functional requirements	1 day
Define prioritizations (MOSCOW)	2 days
Create time box plans	3 days

Risk analysis

Risk management	1 day
Identify risk	1 day
Risk matrix	1 day

Design

Develop use case and class diagrams	4 days
Develop entity relationship diagram (ERD)	2 days
Develop prototypes	3 days

Developing of time boxes

Coding	6 to 8 weeks
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Testing

Functional testing	1 week
Usability testing	1 week

Implementation

Deploying beta version	3 days
Launching real version	1 day

1.7 Estimate Cost

1.7.1 Hardware cost

Unit prices are shown in USD = United State Dollar

No	Item	Description	Unit Price	Quantity	Sub-total
1.	Laptop Computer	Apple MacBook Pro M3 8-Core CPU, 10-Core GPU 8GB Unified Memory 256GB SSD Storage	\$1300	1	\$1300
2.	Display	AOC Q27P3CW 27" QHD Monitor	\$300	1	\$300
3.	Keyboard	Apple's magic keyboard with touch ID,	\$150	1	\$150
4.	Mouse	Apple's magic mouse	\$100	1	\$100
5.	Power backup (UPS)	CyberPower CP1500AVRLCD3, 1500VA/900W	\$210	1	\$210
6.	Routers	MERCUSYS MW302R 300Mbps Multi-Mode Wireless N Router	\$30	1	\$30
7.	External hub	Giismo USB C	\$15	1	\$15
Total hardware cost					\$2105

1.7.2 Software cost

No	Item	Description	Unit Price	Quantity	Sub-total
1.	Operating system	Mac OS	\$0	-	\$0
2.	Data Backup	Seagate Portable 5TB	\$100	1	\$100
3.	Browser	Safari, Chrome, Mozilla	\$0	-	\$0
4.	VPN	Nord (price/year) They must need to use VPN in Myanmar to run services	\$5	12 months	\$60
Total software cost					\$160

1.7.3 Development Cost

No	Item	Description	Unit Price	Quantity	Sub-total
1.	Web Development Cost	Language-PHP, JavaScript Database- MySQL Training cost- FOC Data Entry-FOC	\$1000	-	\$1000
2.	Hosting Cost	Hostinger (Premium)	\$3(2months free)	48months	\$144
3.	Domain Name Registration	Z.com domain name	\$12(register) \$15(renewal)	1year	\$192
Total development cost					\$1336

1.7.4 Summary Cost

1. Category	Cost
Hardware	\$ 2105
Software	\$ 160
Development	\$ 1336
Total Cost	\$ 3061

1.8 Project Plan

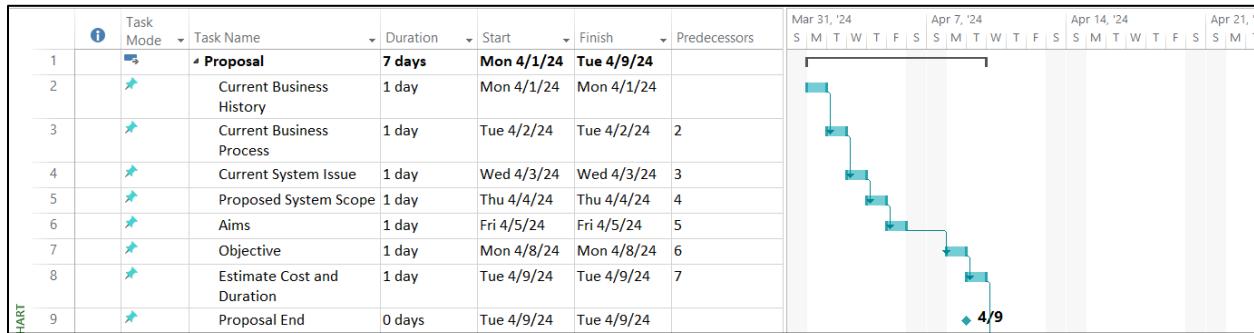


Fig (1) Project Proposal



Fig (2) Introduction



Fig (3) Investigation



Fig (4) Feasibility Study

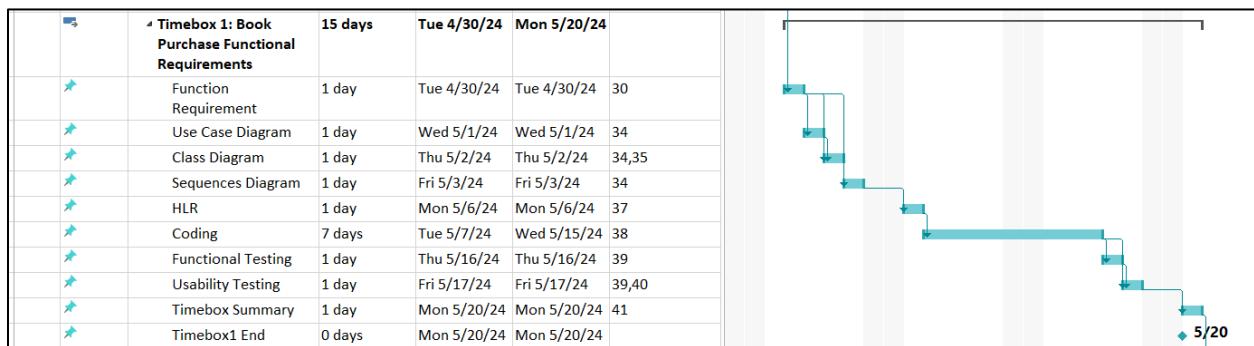


Fig (5) Functional Requirements for Time Box 1

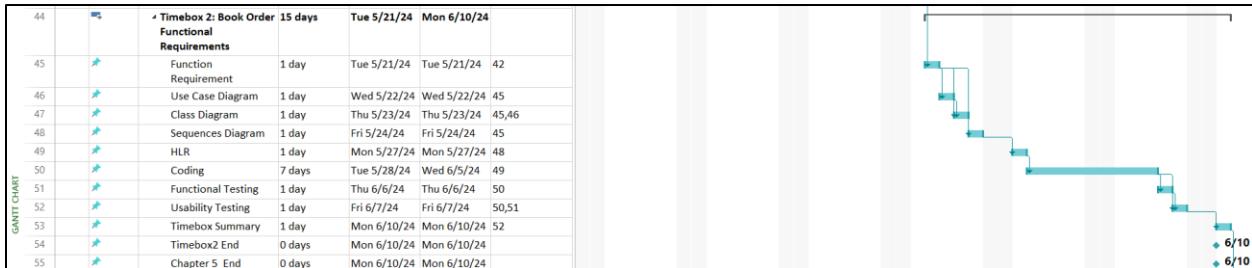


Fig (6) Functional Requirements for Time Box 2



Fig (7) Deployment

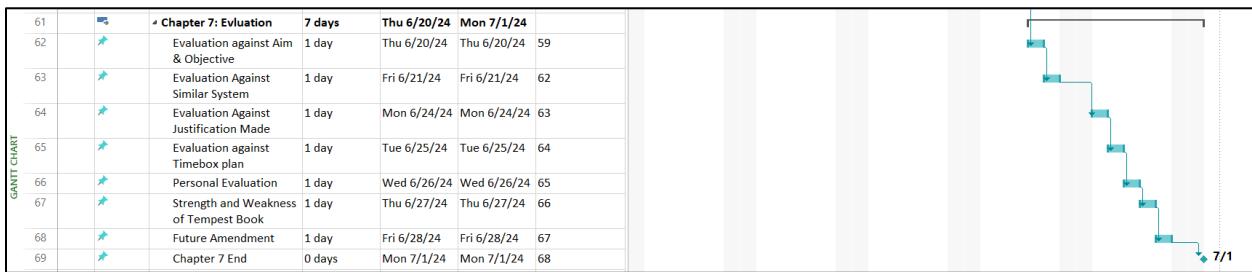


Fig (8) Evaluation

Chapter – 1

Introduction

Chapter 1 Introduction

1.1 Background of the Current System

1.1.1 History

Tempest Bookstore is originally an online book shop which sell their products on social medias mainly on Facebook. The founder and co-founder started this business in 2020 during pandemic period. They started this business for the purpose of people to read book at home by buying books online. They originally sell comic books (mainly manga which is Japanese comic book) at the begin by targeting the younger users to read books while they bore. The founder wanted the youth to get knowledge during those pandemic periods. As soon as they got more audiences, they expand their business by bringing other book genres to their online store. They were able to aim other audience types too.

The founder has friends in US and Japan, so most of the books from US and Japan were able to sell on the store. When the store was selling booking on social medias, customers had to wait at least 2 weeks to get their orders since the founder had to purchase books from foreign. Co-founder help the founder with advertising, managing media accounts and customer support. After their physical store able to opened in 2022, the founder had purchase number of books from abroad and then re-sell those in their physical store. Then, hired stuffs to handle it. They connected with more suppliers and were able to expand their brand to various type of people.

Customers can buy most of Burmese books in physical store. The store still run on social medias and still purchase books for customers. They have lot of payment systems and fast delivery systems too. They provide most of payment that are using in Myanmar e.g. KBZpay, Wave pay, mobile wallet and other mobile banking. Cash on delivery system is also available but only for Yangon, Mandalay and Naypyidaw cities. Shipping services like Royal express, Mini express are also available for faster delivery. They deliver customer orders throughout most of the whole country but for some places which are not able to deliver with delivery services, they use government post offices.

1.1.2 Current Business Process

Registering Customer

Whenever a customer comes to the store and buys a book, the cashier will write down the customer's information (e.g. name, phone number, address) on the store's ledger and a voucher for the customer.

Registering Staff

Manager will take responsibility for this process. He also acts like HR of the store currently. He will collect the data of staff and report it to admins. For the improvement of staff, manager and seniors will take the responsibility.

Purchasing Books

The store manager will report the monthly list to the admin team before the end of every month. The admin team will make contracts with suppliers and distribute books to the store monthly. This process depends on monthly sales and will require risks, time, and responsibilities. Contacting with new suppliers will also be done by the admin team. After this process is finished, books will be distributed in the next month.

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Shipment Problems

Whenever there is a small problem occurs in the stocking process (purchasing books), there will be a delay in shipment. Problems with customs, and delays because of transportation problems also happen sometimes.

Uncommon Problems

Worldwide financial problems, currency rate problems, inflations, and recessions are also problems that can affect a company's business.

1.2 SWOT Analysis

1.2.1 Strengths

Provide various books – having lot of books will increase the good customer feedback and ability to find the wanted book at any time is what a book reader wants most. Even if customers cannot find their wanted book, they can contact to the store since the phone numbers are provided in the system.

Supply Chain Optimization – since the system can purchase books from suppliers at any time, books in stock management is assured.

Customer Engagement Tools – system provide good UI/UX features, good visualization for customers and even provide features for disable persons.

Clear requirements – having clear requirements can help reduce most of the time and most of their problems.

1.2.2 Weakness

Lack of technological knowledge – although founders may know the system that will be using, most of employees are new to this OS system and web-based system.

Internet Dependency – the system depends on internet connectivity, users with poor connectivity may suffer those problems. Also, when the admins had a poor internet issues may have an impact on business.

1.2.3 Opportunities

Improve efficiency – using computerized system will fasten all the transaction processes and be more accurate. And also keep information more secretly and systematically.

Ability to expand business easily – they can expand business using computerized system and those systems will also be able to developed into better versions.

Increase Popularity – since website can be browsed all over the world, they can achieve more customers and suppliers from world-wide.

1.2.4 Threats

Rapid technological innovations – technologies are advancing rapidly in these days and without having ability to withstand with the trends can lead to downfall of the website easily.

Employee resist to change – even if they can catch up with the technology innovations, most of employees even admins cannot catch up with high level technologies.

Network threats – since this is computerized system, if they lack of network knowledges, the website can be attacked easily in many ways.

Maintenance cost – hosting costs and upgrading website or maintaining website will cost a lot.

References for SWOT analysis

(KENTON, 2024) (Schooley, 2024) (Peterdy, n.d.)

1.3 Proposed System Scope

1.3.1 Filtering and editing purchase records

This system will be able to filter purchase records by date, product ID and product status. The records will also be able to be detailed checked and printed.

1.3.2 Create and record order

Customers can easily create orders and be able to check the order details before the payment stage. Those orders will be recorded and admins will be able to check the customers' orders and order details for confirmations but admins will not be able to edit those orders and order details.

1.3.3 Edit and delete data

Admin will be able to edit all the data that are related with the books. For example, they will edit the category, publishers, ISBN codes, authors information. They can also delete them when needed. Therefore, there will be all CRUD functions for all data for admin except manipulating customers' data. Customers will also be able to do all CRUD functions while ordering books.

1.3.4 Create voucher

The system will be able to create a voucher for both purchasing and ordering. There will be a print button feature for this in the system. Using this feature in future, both admins and customers can confirm data about their purchasing and orders.

1.3.5 Filtering and searching

Customers will be able to search books by name. Or they can filter with categories, publisher since those both have group nature. Books can also be able to find with ISBN numbers and author names. With this function, customers can search books faster and reduce unnecessary time than searching books manually.

1.4 Aims and objectives

1.4.1 Aims

This system primary aim is for giving the convenience to customer. With the help of a website, customers will be able to buy books whenever they want from anywhere. Also, the website will help admins to be able to check and analyze data.

1.4.2 Objectives

Analysis

- Gather information (both internal and external interviews)
- SWOT analysis
- Similar product comparison
 - Functional comparison
 - Non-functional comparison

Feasibility Study

- Methodologies
- Programming Languages
- Choosing database

Foundation

- Functional requirements
- Non-functional requirements
- Prioritizations
- Time box planning

Risk Analysis

- Risk management
- Identification of possible risks
- Risk matrix

Design

- Develop use case and class diagram
- Develop ERD (entity relationship diagram)
- Develop Prototype (UI)

Developing timeboxes

- Coding

Testing

- Functional testing and iteration
- Usability testing and iteration

Implementation

- Deploying beta version
- Launching real version

1.5 Brief overview of the remaining chapters

There will be more 6 chapters left in this documentation. The upcoming chapter is bout similar product comparison which will include functional comparisons and non-functional comparisons of 3 similar websites. Feasibility studies will be in chapter 3 which will include technical feasibility, DSDM feasibility, LESPI. Chapter 4 is about making foundation for the project. There will be functional requirements, non-functional requirements, MOSCOW prioritizations, risk managements, risk identifications, risk matrix and, critical success factors for the project.

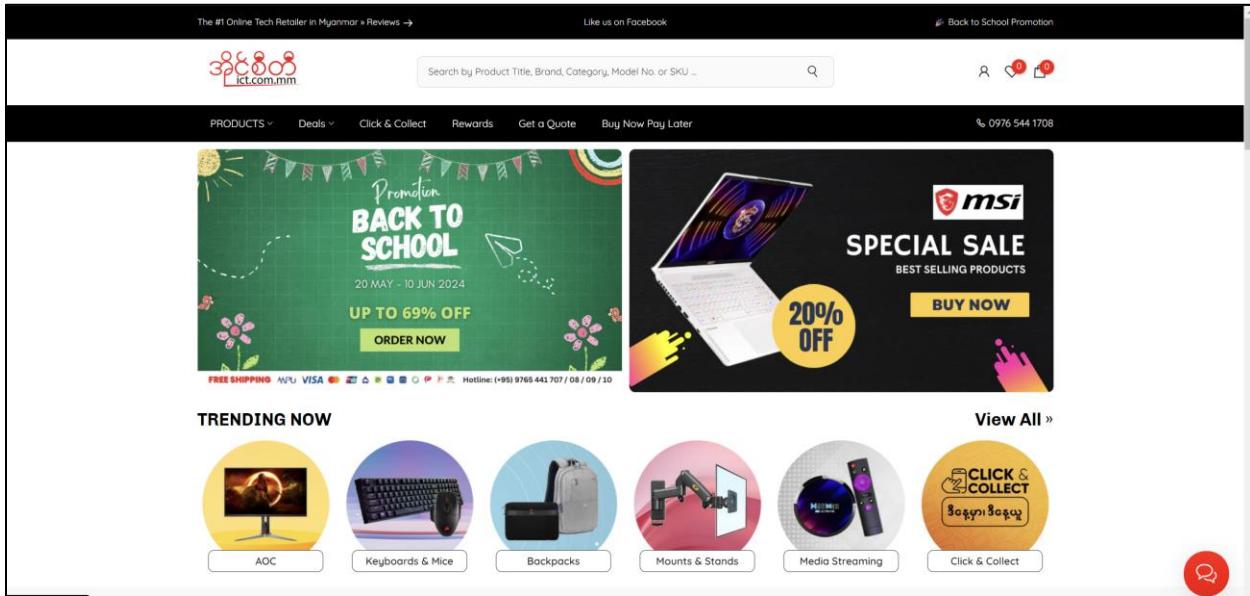
Chapter 2

Similar Product Comparison

Chapter 2 Similar Product Comparison

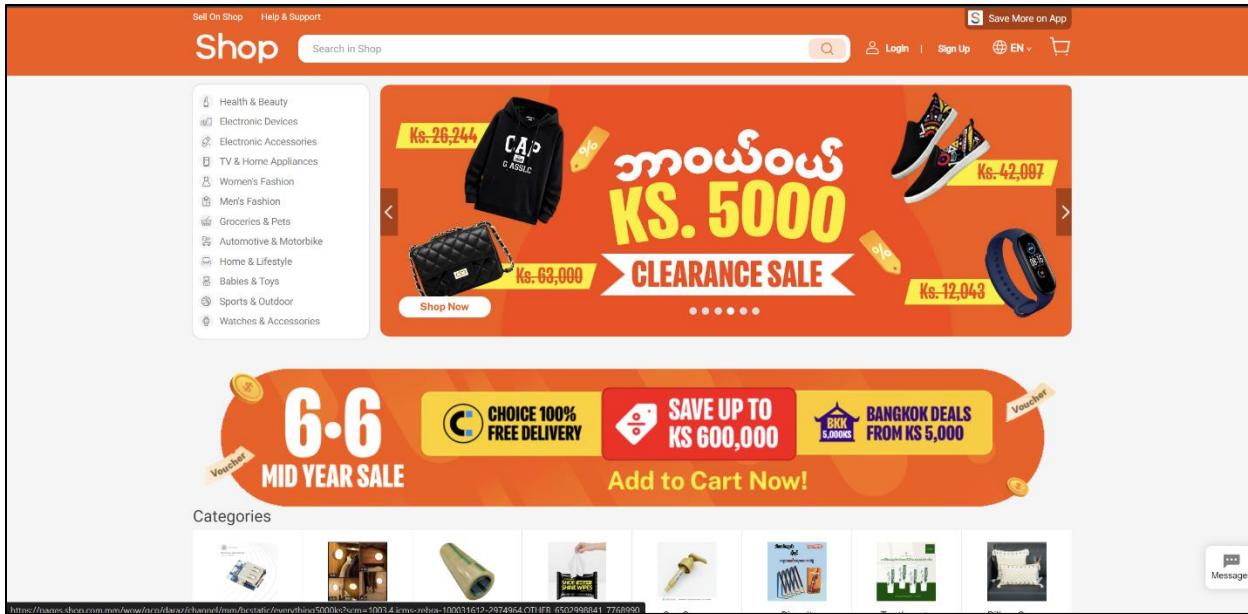
2.1 Similar product introduction

In this chapter, three websites will be compared which are related with online selling system (e-commerce). They are shop.com.mm, ict.com.mm, and citymall.com.mm. Their designs and features will be compared each other and later be referenced in this project.



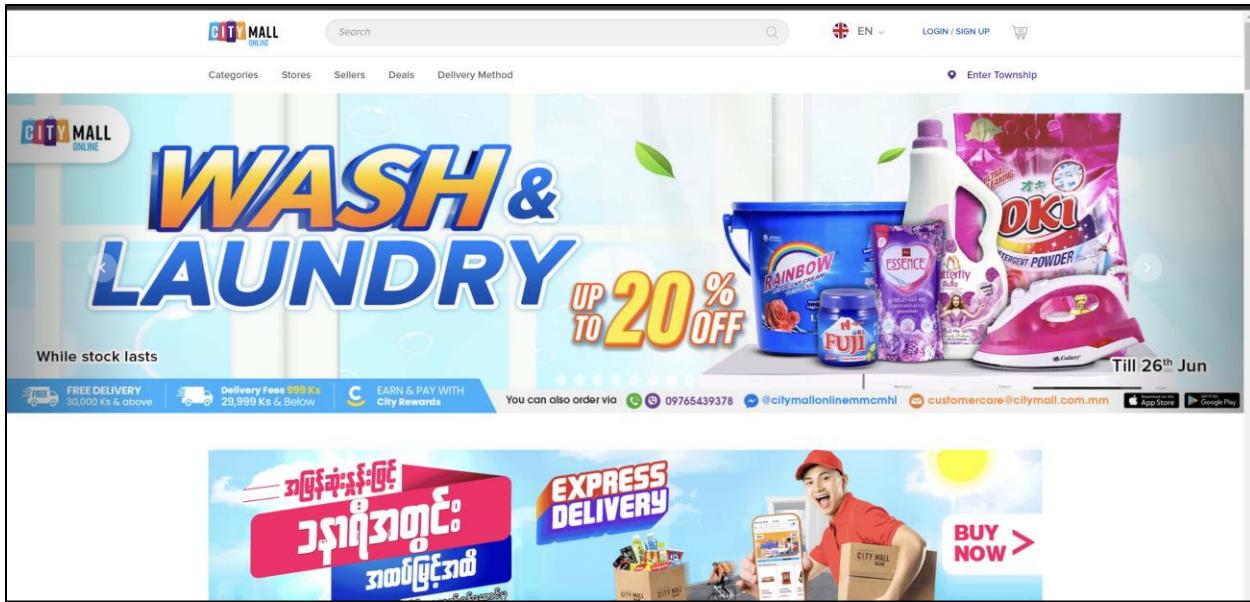
This is the home page of ict.com.mm.

This is well known e-commerce website in Myanmar. It provides all types of technology related things. The website is easy to use and has e-commerce related features. Customers can buy products and save it to cart and later before the payment step, they can edit their orders, choose payment methods, payment names, delivery types.



This is the home page of shop.com.mm.

It is most famous e-commerce website in Myanmar. Their functions, products, and services are well known. They provide functions which an e-commerce website should have. For example, real-time update, delivery systems, ordering system, rating items, provide various types of payment systems, well categorized items.



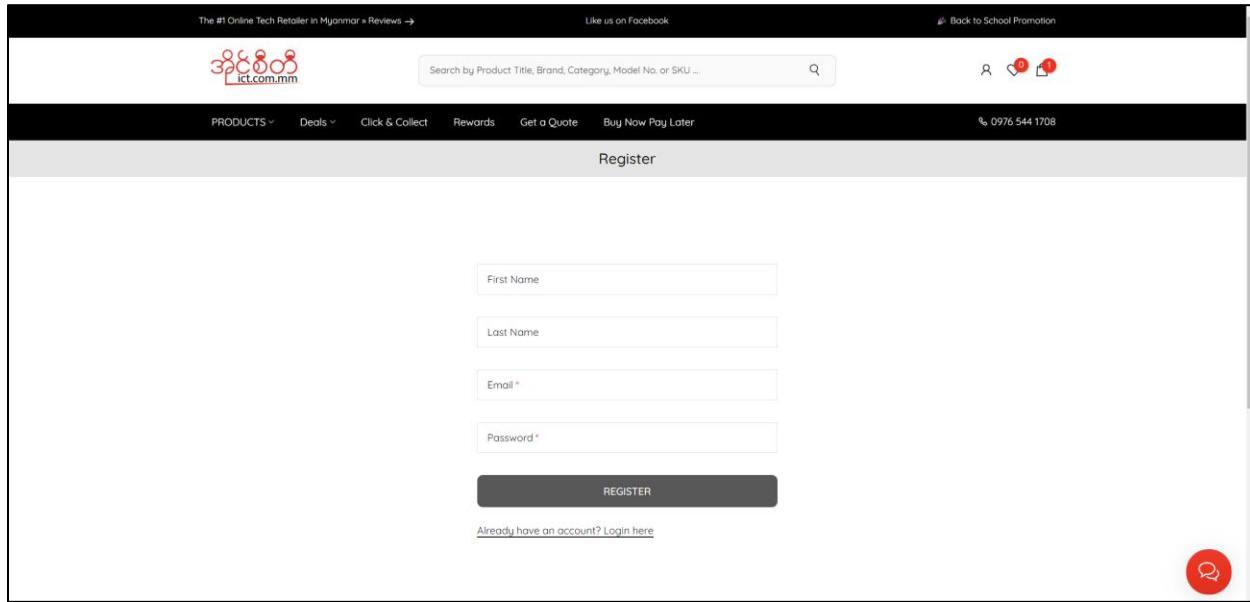
This home page of citymall.com.mm.

Citymall is a famous shopping center in Myanmar. Their website is also well known among the shopping centers. It provides enormous products including foods, home products, fashion related items, tech items, and so on. They also have main key factors of e-commerce system-based websites.

2.2 Functional Comparison

2.2.1 Customer Registration Page

lct.com.mm



The screenshot shows the customer registration page for lct.com.mm. At the top, there's a navigation bar with links for 'PRODUCTS', 'Deals', 'Click & Collect', 'Rewards', 'Get a Quote', and 'Buy Now Pay Later'. On the right side of the header, there are icons for Facebook, Twitter, and LinkedIn, along with a phone number '0976 544 1708'. The main content area is titled 'Register' and contains four input fields: 'First Name', 'Last Name', 'Email *', and 'Password *'. Below these fields is a dark grey 'REGISTER' button. At the bottom of the form, there's a link 'Already have an account? Login here' and a red circular icon with a white question mark.

This is the customer registration page. User will need to submit the information to register an account. If the user already has an account, login page can be go through from the described link.

Shop.com.mm

The screenshot shows the registration process for Shop.com.mm. At the top, there's a navigation bar with links for 'Sell On Shop', 'Help & Support', 'Categories', 'Login', 'Sign Up', and language selection ('EN'). Below the navigation is a form titled 'Create your Shop Account'. The form requires 'Phone Number*', 'Full name*', 'Verification Code from viber*', 'Password*', 'Birthday', and 'Gender'. There are also fields for 'Get code via other methods' and 'Enter your first and last name'. A checkbox for receiving exclusive offers via SMS is checked. A 'SIGN UP' button is prominent. Below the form, a note states: 'By clicking "SIGN UP", I agree to Shop's Terms of Use and Privacy Policy.' It also says 'Or, sign up with' followed by 'Facebook' and 'Google' buttons. At the bottom of the page, there are sections for 'Customer Care' (Help Center, How to Buy, Corporate & Bulk Purchasing, Returns & Refunds, Contact Us), 'Shop' (About Shop, Careers, Shop Cares, Terms & Conditions, Privacy Policy, Online Shopping App), 'Shop International' (links to Pakistan, Bangladesh, Sri Lanka, Myanmar, Nepal), and 'Exclusive Deals and Offers!' (links to App Store, Google Play, and Vmall App Gallery). A QR code for Happy Shopping is also present.

This is the registration page of shop.com.mm. user will need to submit the described information to make registration. The good feature of this website is that if user does not want to submit the information, user can use Google or Facebook account as a registration.

Citymall.com.mm

The screenshot shows the login and sign-up page for Citymall.com.mm. At the top, there's a navigation bar with links for 'Categories', 'Stores', 'Sellers', 'Deals', 'Delivery Method', 'EN', 'LOGIN / SIGN UP', and a search bar. Below the navigation is a red banner with the text 'Login / Sign Up'. The page is divided into two main sections: 'Returning Customer' on the left and 'Create an Account' on the right. The 'Returning Customer' section allows users to log in using their mobile number and password, with options to 'Forgot Password?' and 'LOG IN'. The 'Create an Account' section allows users to enter their first name, last name, mobile number, email address, and password to create a new account. A note at the bottom of the account creation section states: 'You can signup using your email address or mobile number or both.'

This is the registration page of citymall.com.mm. User need to submit the described information. After submitting, OTP (one-time password) key will be messaged in submitted phone number for the confirmation. After correctly submit OTP, account registration process of Citymall website is complete.

2.2.2 Login page comparison

lct.com.mm

The #1 Online Tech Retailer in Myanmar • Reviews → Like us on Facebook Back to School Promotion

ict.com.mm

Search by Product Title, Brand, Category, Model No. or SKU ...

PRODUCTS Deals Click & Collect Rewards Get a Quote Buy Now Pay Later 0976 544 1708

LOGIN

● PLEASE ADJUST THE FOLLOWING:

- Incorrect email or password.

Email *

Password *

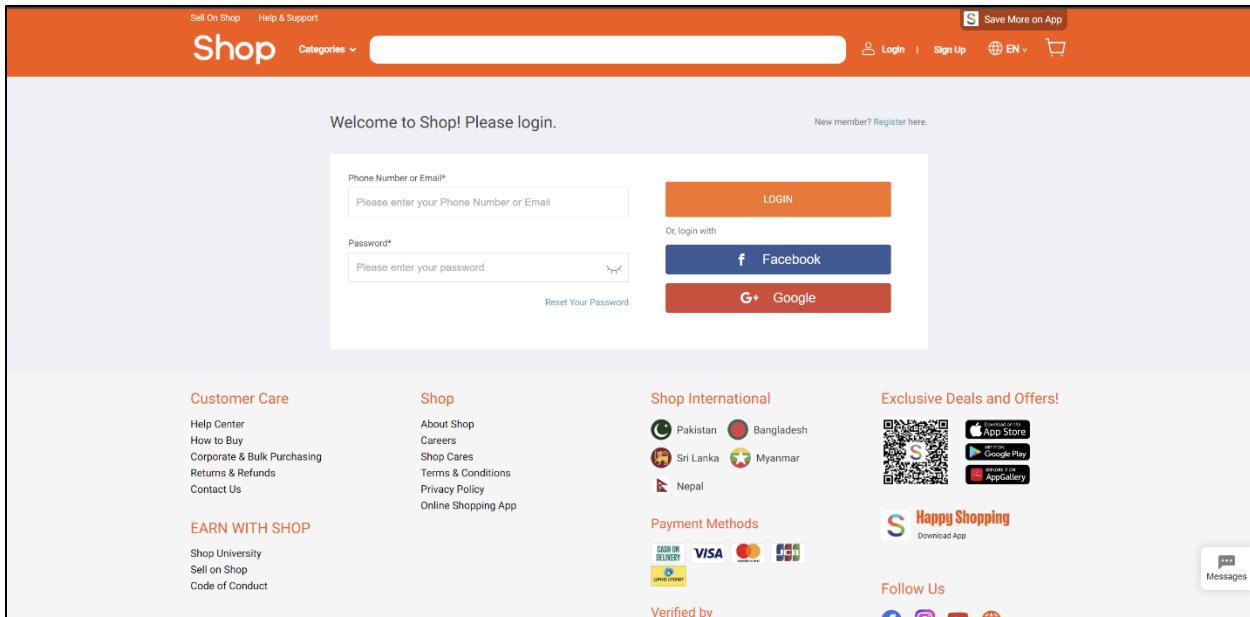
Forgot your password?

SIGN IN

New customer? Create your account

This is login page of ict.com.mm. User has to provide email and password. If they are correct user will able to make order process.

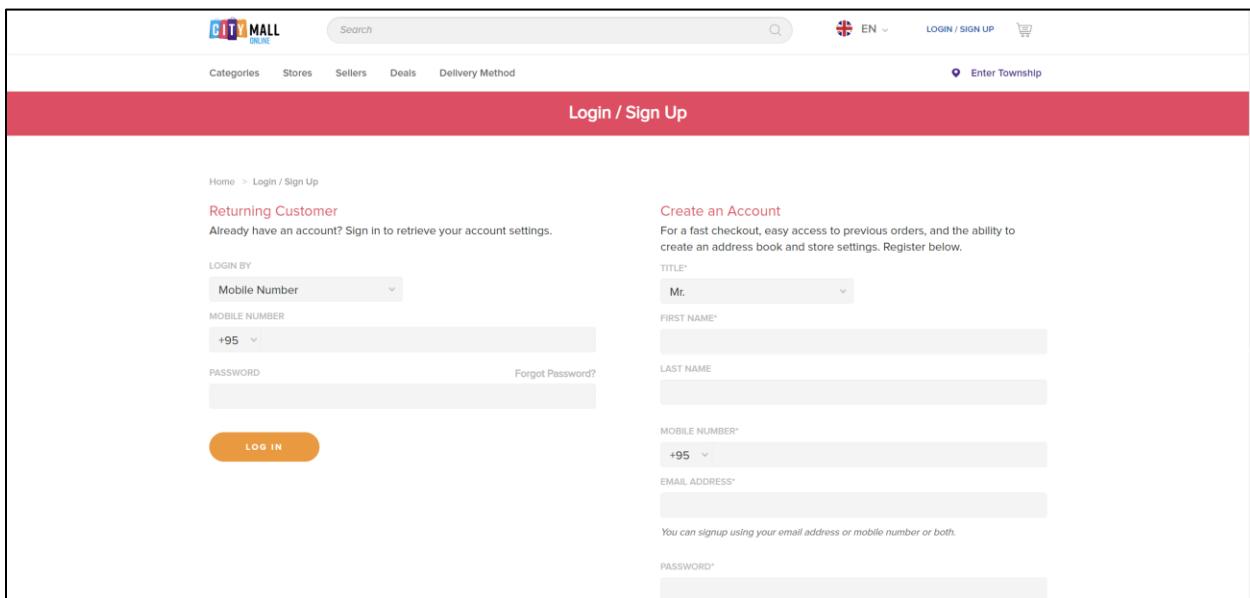
Shop.com.mm



The screenshot shows the login page of the website shop.com.mm. At the top, there's a navigation bar with links for 'Sell On Shop', 'Help & Support', 'Categories', and user account options ('Login', 'Sign Up', language 'EN', and a shopping cart icon). A button 'Save More on App' is also present. The main content area has a heading 'Welcome to Shop! Please login.' and a sub-instruction 'New member? Register here.' Below this are two input fields: 'Phone Number or Email*' and 'Password*', both with placeholder text. To the right of these fields are three login buttons: a large orange 'LOGIN' button, a blue 'Or, login with Facebook' button, and a red 'G+ Google' button. Below the input fields is a 'Reset Your Password' link. The bottom section of the page contains several links: 'Customer Care' (Help Center, How to Buy, Corporate & Bulk Purchasing, Returns & Refunds, Contact Us), 'Shop' (About Shop, Careers, Shop Cares, Terms & Conditions, Privacy Policy, Online Shopping App), 'Shop International' (links to Pakistan, Bangladesh, Sri Lanka, Myanmar, Nepal), 'Exclusive Deals and Offers!' (with QR codes for app stores), 'Payment Methods' (listing Cash on Delivery, VISA, MasterCard, and others), and 'Follow Us' (links to social media icons). There's also a 'Happy Shopping' download app section and a 'Verified by' seal.

This is login page of shop.com.mm. User can enter email and password if account is made. Or user can use Facebook or Google accounts to login the website.

Citymall.com.mm



The screenshot shows the login and registration page of the website Citymall.com.mm. At the top, there's a navigation bar with links for 'Categories', 'Stores', 'Sellers', 'Deals', 'Delivery Method', a search bar, language 'EN', and user account options ('LOGIN / SIGN UP' and a shopping cart icon). A red banner at the top says 'Login / Sign Up'. Below this, there are two main sections: 'Returning Customer' and 'Create an Account'. The 'Returning Customer' section allows users to sign in using their mobile number and password. The 'Create an Account' section provides fields for title (Mr./Mrs.), first name, last name, mobile number, email address, and password. A note at the bottom states: 'You can signup using your email address or mobile number or both.' The page uses a clean, modern design with a white background and light gray form fields.

City mall website has the same page for login and account registration. User will have to enter mobile phone number and password. If they are correct, user will able to continue the order processes.

2.2.3 Order management pages

This page normally called as a cart in e-commerce websites.

Ict.com.mm

The screenshot shows the Ict.com.mm website's shopping cart page. At the top, there's a navigation bar with links for PRODUCTS, Deals, Click & Collect, Rewards, Get a Quote, and Buy Now Pay Later. A phone number (0976 544 1708) and a 'Like us on Facebook' button are also present. The main content area is titled 'Shopping cart' and displays two items:

PRODUCT	PRICE	QUANTITY	TOTAL
Apple USB-C With Lightning cable 1 Meter (MUQ93)	K102,000	1	K102,000
LG Air Conditioner 1.5 HP Dual Inverter (S4C12TZAAA)	K1,239,000	1	K1,239,000

Below the cart, there's a section for 'Add Order Note' with a placeholder 'For example: Install HDD. Leave with my carrry. Name of highway bus.' and a note 'Congratulations! You've got free shipping!' with a small icon.

User can check the items bought in this place. User can also check the price and can add more quantity in this page.

Shop.com.mm

The screenshot shows the Shop.com.mm website's shopping cart page. At the top, there's a navigation bar with links for Sell On Shop, Help & Support, Categories, and a search bar. A 'Save More on App' button and a user profile 'Hello, brasawipat' are also present. The main content area is titled 'Order Summary' and shows the following details:

Subtotal (1 items)	Ks 5,300
Shipping Fee	Ks 1,800
Total	Ks 7,100

Below the summary, there's a section for 'Enter Voucher Code' with an 'APPLY' button. The cart itself lists items from 'One Two One Complex' and 'AYAMG SHOP':

Category	Item Description	Price	Quantity	Action
One Two One Complex	Alberto Vo5 Men 3 in 1 Shampoo Conditioner Body Wash Ocean Surge 443ml	Ks 5,300	1	DELETE
AYAMG SHOP	Game Controller - Black USB receiver computer Android mobile phone rocker TV TV game box	Ks 23,000	1	DELETE

At the bottom, there are sections for Customer Care, Shop, Shop International, Exclusive Deals and Offers!, and payment methods.

In this website, user can check the ordered items and can increase the quantity. Shipping fee is also included in this cart page.

Citymall.com.mm

The screenshot shows a shopping cart page from Citymall.com.mm. At the top, there are links for 'Home' and 'My Cart'. On the right, there are buttons for 'EMPTY CART' and 'SAVE YOUR CART'. Below these are five columns: 'PRODUCT DESCRIPTION', 'PRICE', 'QUANTITY', 'DELIVERY MODE', and 'TOTAL'. A red banner at the top says 'Standard Delivery' and '(Shop items worth 30,000 Ks or more for FREE Standard Delivery)'. The product listed is 'Pocari Sweat Ion Supply Drink 500ML', priced at 2,000 Ks, with a quantity of 1. The delivery mode is set to 'Standard Delivery' with a cost of 2,000 Ks. Below the cart summary, there's a section for 'COUPON CODE' with a text input field and an 'APPLY' button. To the right, it shows 'Cart Total' (2,000 Ks), 'Standard Delivery Charges' (999 Ks), and 'Grand Total' (2,999 Ks). At the bottom, there are buttons for 'CONTINUE SHOPPING' and 'PROCEED TO CHECKOUT'.

In this website when user wants to update the quantity, user have to enter the amount. There is also coupon code if user have their coupon while buying items in their shopping mall center. There is also standard delivery charge and grand total cost of orders.

2.2.4 Checkout page

lct.com.mm

The screenshot shows the checkout page for lct.com.mm. At the top, there's a logo and the URL. Below it, the user's account information is displayed. On the left, a 'Delivery' section offers 'Deliver' (selected) or 'Pick up'. It includes fields for address details like first name, last name, company, address, township, city, and postal code. On the right, the shopping cart lists two items: an Apple USB-C With Lightning cable 1 Meter (MUQ93) priced at K 102,000.00 and an LG Air Conditioner 1.5 HP Dual Inverter (S4C12TZAAA) priced at K 1,239,000.00. A discount code field with an 'Apply' button is also present. The total amount is K 1,341,000.00.

Delivery method

The delivery method selection screen shows three options:

- Bus Terminal - နယ်ကားဂိတ်ပို့ (ရွှေးခမပါ) Free
- Yangon Delivery - ရန်ကုန်အိမ်အရောက်ပို့ Free
- National Delivery - နယ်အိမ်ပို့ K 6,500.00

Payment

All transactions are secure and encrypted.

2C2P



+84



After clicking “Pay now”, you will be redirected to 2C2P to complete your purchase securely.

Bank Deposit

Cash on Delivery (COD)

KBZPay

WavePay

Onepay

Cash on Pickup (COP)

CBPay

AYAPay

M-Pitesan

MPT Pay

Billing address

Same as shipping address

Use a different billing address

Add Surcharge

Select 2.5% for MPU & 4.5% for credit card. Else, we will add on your invoice manually before fulfillment. MPU ၂.၅%, credit card ၄.၅% ရွေးပါ။ မရွေးမိပါက မပို့ခင် invoice တွင် ထည့်ပေါင်းပါမည်။ (Refunds will only be made by 2C2P for canceled orders paid by 2C2P. The duration is from 3 days to a week. 2C2P ဖြင့် ငွေပေးချေ ထားသော cancel order များအတွက် 2C2P ဖြင့်သာ ငွေပြန်အမ်းပါမည်။ ကြာချိန်မှာ ၃ ရက်မှ တပါတ်အတွင်း ဖြစ်ပါသည်။)

Pay now

In this page, user can check the order list before doing the payment. In this website, user can choose whether he/she likes to choose delivery or pick up. There is location for user to add if deliver is chosen. There are also delivery methods, payment types,

Shop.com.mm

The screenshot shows the delivery information section on the left and the order summary section on the right. The delivery information section includes fields for Full name, Region, Phone Number, City, Building / House No / Floor / Street, Township, Colony / Suburb / Locality / Landmark, Address, and a dropdown for Select a label for effective delivery (OFFICE or HOME). A 'SAVE' button is at the bottom. The order summary section shows Items Total (1 Items) Ks 5,300, Delivery Fee Ks 1,800, and Total Ks 7,100 (VAT included). It also has a 'Place Order' button.

In this website, customer can final check the order and choose save to make order. All the total charges including delivery fees are described.

Citymall.com.mm

The screenshot shows the checkout process. The steps are: Shipping Information, Billing Information, Delivery Slots, City Rewards, and Payment. The current step is Shipping Information. It shows a 'Secure Checkout' section with a 'Shipping Address' form and an 'Order Summary' section. The order summary details a product: Pocari Sweat Ion Supply Drink 600ML, Item Price: 2,000 Ks, and Quantity: 1. The cart total is 2,000 Ks, standard delivery charges are 999 Ks, and the grand total is 2,999 Ks.

Customer will need to add name that wants to be delivered as. Customer will also add necessary information before making order payment and can able to check all the order status including delivery charges and prices before the payment.

2.3 Functional Summary Evaluation

Each functional requirements' best score – 5.

Worst score – 1.

No	Function	Ict.com.mm	Shop.com.mm	Citymall.com.mm
1.	Customer Registration	1 2 3 <u>4</u> 5	1 2 3 4 <u>5</u>	1 2 3 4 <u>5</u>
2.	Customer Login	1 2 3 <u>4</u> 5	1 2 3 4 <u>5</u>	1 2 3 <u>4</u> 5
3.	Order Management	1 2 3 <u>4</u> 5	1 2 3 <u>4</u> 5	1 2 <u>3</u> 4 5
4.	Check out page	1 2 3 4 <u>5</u>	1 2 3 4 <u>5</u>	1 2 3 <u>4</u> 5
5.	Overall	17	19	16

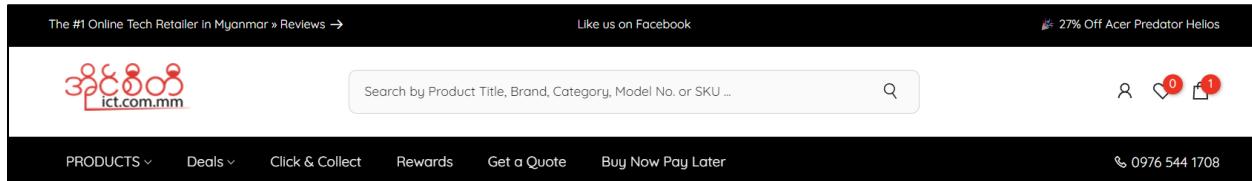
2.4 Functional Comparison Summary

This is the functional comparison summary for 3 similar websites which are ICT, Shop, and Citymall. For Customer Registration although ICT's UI is good but its UX is not that convenient to use that much and customers cannot use their Gmail accounts or other media accounts to register. While the other websites have that features and easy to use. Customer Login page is almost the same for all three websites. While order managing, Citymall website need to give more detail information for customer. The other two websites are good for that. ICT has the best check out page among them. It provides details information that customer will need to enter and also various type of payment information to choose. For the overall, they all have great features and necessary functions as an E-commerce website.

2.5 Non-functional Comparison

2.5.1 Search Bar Comparison

lct.com.mm



The screenshot shows the header of the lct.com.mm website. At the top left is the text "The #1 Online Tech Retailer in Myanmar » Reviews →". To the right is a "Like us on Facebook" button and a promotional banner for "27% Off Acer Predator Helios". The logo "ict.com.mm" is on the left, followed by a search bar containing "Search by Product Title, Brand, Category, Model No. or SKU ...". On the right are user icons for profile, cart (0), and wishlist (1). Below the header is a navigation bar with links: PRODUCTS, Deals, Click & Collect, Rewards, Get a Quote, Buy Now Pay Later, and a phone number 0976 544 1708.

Shop.com.mm



The screenshot shows the header of the Shop.com.mm website. At the top left are links for "Sell On Shop" and "Help & Support". The "Shop" logo is in the center, followed by a "Categories" dropdown and a search bar with "Search in Shop". On the right are "Save More on App", a user profile "Hello, hirawayu...", language selection "EN", and a shopping cart icon with 1 item. Below the header is a navigation bar with links: Categories, Stores, Sellers, Deals, Delivery Method, and a location indicator "Township: Ahlone".

Citymall.com.mm

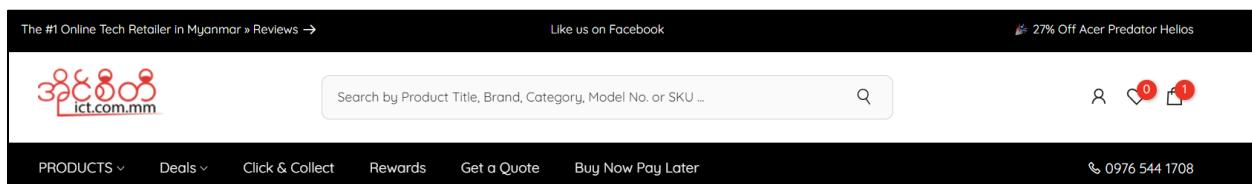


The screenshot shows the header of the Citymall.com.mm website. At the top left is the "CITY MALL ONLINE" logo. The top right features a search bar with "Search", user account "dalki's Account", and a shopping cart with 1 item. Below the header is a navigation bar with links: Categories, Stores, Sellers, Deals, Delivery Method, and a location indicator "Township: Ahlone".

All three websites' search bar are similar and their functions work similar too.

2.5.2 Language Change

lct.com.mm



The screenshot shows the header of the lct.com.mm website, identical to the one above but with a focus on the language selection. The "EN" link in the top right corner is circled in blue.

Shop.com.mm



The screenshot shows the header of the Shop.com.mm website, identical to the one above but with a focus on the language selection. The "EN" link in the top right corner is circled in blue.

Citymall.com.mm

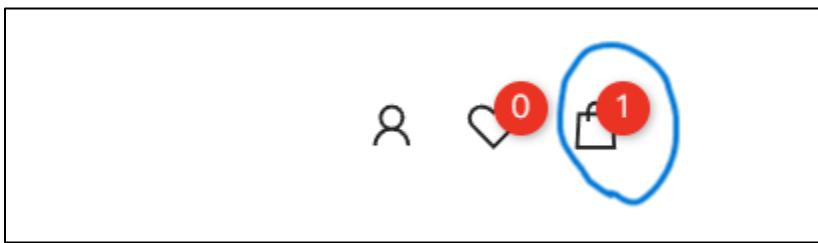


The screenshot shows the header of the Citymall.com.mm website, identical to the one above but with a focus on the language selection. The "EN" link in the top right corner is circled in blue.

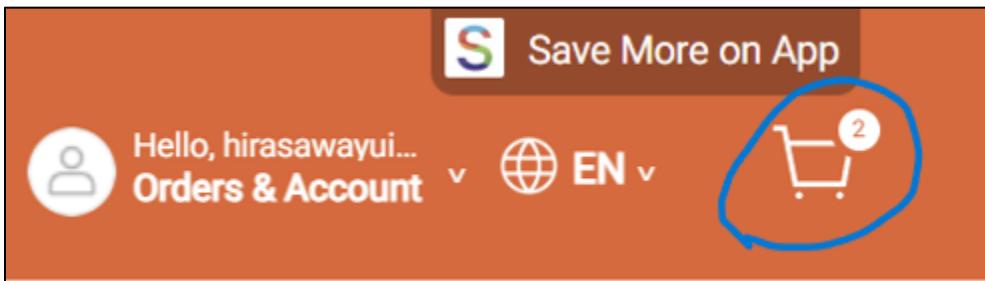
Shop.com.mm and Citymall.com.mm provide language exchangeable system while Ict.com.mm do not provide it.

2.5.3 Shopping Cart

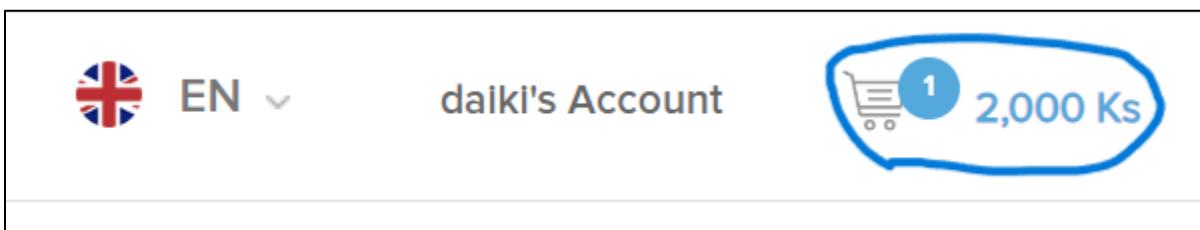
Ict.com.mm



Shop.com.mm



Citymall.com.mm



Ict.com.mm has simplest shopping cart design. And Citymall.com.mm even provide the amount in their shopping cart icon.

2.6 Non-Functional Comparison

Each non-functional requirements' best score – 5

Worst score – 1

No	Non-Function	Ict.com.mm	Shop.com.mm	Citymall.com.mm
1.	Search Bar Comparison	1 2 3 <u>4</u> 5	1 2 3 4 <u>5</u>	1 2 3 <u>4</u> 5
2.	Language Change	<u>1</u> 2 3 4 5	1 2 3 <u>4</u> 5	1 2 3 4 <u>5</u>
3.	Shopping Cart Comparison	1 2 <u>3</u> 4 5	1 2 3 <u>4</u> 5	1 2 3 4 <u>5</u>
4.	Overall	8	13	14

2.7 Non-Functional Summary

These three websites have unique designs and provide good non-functional features. ICT website has modern UI design. Shop website provide easy to use features for users. Citymall provides tons of product visualization on their website. Their search bars are easy to be found. But the language providing feature is not available in ICT. This feature is really important for people in Myanmar. For the shopping cart, Citymall is the best since it refreshes really quick and also provide the ordered amount which is convenient feature for the users.

Chapter 3 Feasibility Study

3.1 Technical Feasibility

3.1.1 Methodologies

DSDM (Agile)

DSDM is a dynamic system development method and has an iteration nature. It is a framework of an Agile methodology. It includes timebox plans, prioritizations of task (MOSCOW), collaboration, and iterations development. It can be used for long term and can be set budget and durations. There will also be user involvement in this method since it focuses on client's requirements. Since DSDM is an agile framework, it is also flexible and has ability to accept changes easily. This method can also guarantee the final product quality and can be delivered right on time.

Waterfall

Waterfall is a traditional development methodology and has sequential nature. It was created and established in 1970 by Winston w. Royce. Waterfall has rigid structure and approach phase by phase. It has 6 phases and called as streams or phases and can move to another phase only after previous phase is completely finished. It is suitable for project with clear requirement and less changes. Waterfall emphasizes linear development which will need specific requirements and difficult to go back to previous phase. Unlike DSDM, it is not flexible and cannot handle many changes.

3.1.2 Strength and Weakness of each Methodology

Strength of DSDM

User involvement

DSDM prioritize user involvement which can enhance the project faster by knowing the exact requirements. Not only this fasten the project, it also improves the final quality of the product and improve the relationship between the team and the stakeholders.

Iterative and incremental development

Having iterative and incremental natures is one of the reasons people use DSDM in modern days. Iterative nature helps the project by not wasting time whenever the error occurs. And Incremental nature increases the project by developing in parallel since it breaks down into various structures.

Flexible and quality assurance

DSDM is highly flexible, adaptable and focus on final product quality. It accepts changes while maintaining the quality of the product.

Streamlined error handling

It can handle errors without delaying the other developments. In DSDM, testing is done in each stage and can solve the early errors even if they were found in final stage of the product.

Extensible for future developments

In DSDM, future developments, maintenance and product extensions are also considered and well-planned since the beginning of the project, it is created for future iterations whenever users want extend their product in the future.

Weakness of DSDM

Documentation issues

Since it has iterative nature, documentation updating problems are always occur in DSDM. Sometime there can be late documentations and report. And in sometimes, documentation is too much when the project dealt with lots of iterations.

Dependency on user requirement

DSDM depend and focus on user requirement a lot. Sometime this can occur lots of iterations. Also lacking user involvement can be risky for the final product.

Costly implementation

It starts with low cost and the longer the project takes, cost will be increase also. Iterations can also increase the cost and cannot able to predict the exact cost of the project.

Unpredictable product result and scope

Since the product will face the changes and iterations, the final product result cannot be predictable since the beginning. So, do the scope of the project can only be averagely predicted due to DSDM's flexible and adaptive natures.

References for strength and weakness of DSDM

(airfocus, n.d.) (Shahrukh, 2022) (Product Plan, n.d.)

Strength of Waterfall

Clear structure

Since the beginning, every stages of the project are well planned and detailed. Project members can do their respective jobs within the planned time. It also can predict the final stages and product at the beginning.

Predictable cost

Plans and costs can be predictable in the early stage in Waterfall method. This could help the stakeholders to adjust the budget and can also help the members by knowing their exact salary.

Emphasis on documentation

This method focuses on documentation and deliver the final product to stakeholders with well-written documentation. Since there are less changes in the development, there will be consistent and clear documentation.

Clear scope and goals

In waterfall, aims and objectives are clearly defined in the beginning stage of the project. This could help the stakeholders know the final product. Knowing the exact goals can help the stakeholders to make clearer choices.

Weakness of Waterfall

Inflexibility

Unlike Agile base methodologies, waterfall is inflexible and unable to accept the changes easily. And once the scope is defined, it is mostly impossible to change and not suitable for projects that require changes and future developments.

Lack of customer involvement

Clients only involve in the early stage of the project since the client involvement is limited. This could cause the final product results may not meet with the client's expectations.

Lack of prototyping

There is no prototyping until the late stages of the project since its development progresses in a linear fashion. This could be troublesome when there is misleading between clients and developers.

Late defect discovery

Testing in waterfall usually occurs only after development stages. So whenever a defect or an error occurs, there will be huge problem since it is hard to change and whenever a change is occurred, the whole development will restart again.

References for strength and weakness of Waterfall

(solo innovator, n.d.) (Aiden Gallagher, 2019) (tryqa, n.d.) (lucidchart, n.d.)

3.1.3 Comparison of Methodology

Criteria	DSDM (Agile)	Waterfall
Size	Suitable for any project of any business.	Suitable for projects with clearly defined detail requirement and fewer changes.
Timeline	Provides developments and supports until the project is decomposed.	The exact timeline of the project is defined and documented.
Flexibility	Is flexible and adaptable. Can accept changes and able to adjust with client's needs.	Since aims and objectives are predefined, changes may not be done easily.
User Involvement	User involvement is important and user may be able to involve in every stage for better product quality and make sure it meets the requirements	User involvement is only in the early stage of the project. Unless there is an emergency conditions, user or owner may not involve in the project
Budget	The cost is vary depending on the changes and timeline of the project which may include future business extensions and maintenance.	Since a clear budget is defined at the beginning of the project, it is suitable for fixed budget projects.

3.1.4 Recommendation Methodology

DSDM

For a website like 'Tempest Books' would be preferred with DSDM. There will lot of changes in the future for example, design changes, adding new features and functions for customers. Also, as the business becomes larger, there will be further improvements in the product. DSDM can able to provide the changes while maintaining the old system which would be suitable for E-commerce websites. Also, there is testing in every stage and involves risk managements, CIA of customer information and business information is secured which would be good for reputation of business. Therefore, DSDM is suitable for the current project and can guarantee that its final result will also meet owners' satisfactions.

3.1.5 Programming Languages

PHP

PHP is widely used in web development and an open source scripting language. It is easy to write the server-side scripts for dynamic web pages and compatible with various databases like MySQL, PostgreSQL and others. It is also easy to understand and most of the websites are built with PHP and many developers can understand and use PHP language. It also has powerful frameworks like Laravel. It also provides good security features like data encryption, secure authentication methods, and protect vulnerabilities against SQL injections and XSS attacks. In summary, PHP is easy to use, cost effective, has powerful features and robust frameworks, and extensive community support made it one of the most popular language choices for building dynamic and iterative web applications.

Java

Java is a compiler language and also platform independent since it can run on any device that has Java Virtual Machine. It is popular for its scalability nature and widely used in large-scale web applications and also has robust frameworks and libraries that help in building complex projects. Java may not be as lightweight as other languages. But advancements in JVM, compiler technologies and having frameworks like Spring, Hibernate make Java popular in enterprise level applications and still using. Java also has great security features like build-in security manager, cryptography APIs, and authentication mechanisms. In summary, Java's scalability, versatility, reliability, performance, and strong ecosystem make it also reliable and demanded language for enterprise-level web applications.

3.1.6 Strength and Weakness of each Programming Languages

Strength of PHP

Database support: PHP support for various databases such as MySQL, PostgreSQL which are commonly used in web development. It integrates seamlessly with MySQL by using PDO extensions.

Flexibility: PHP is highly flexible and versatile. It can be combined with other programming languages like JavaScript and HTML to create front-end dynamic pages. And it supports multiple programming paradigms so that developers can choose appropriate approach.

Cost-effective: PHP is open source and its frameworks and libraries are also open-source. Also, XAMPP and WAMP like database software packages and RDBMS like MySQL and PostgreSQL which are also open source.

Vast Ecosystem: PHP has a large ecosystem of frameworks. Most popular framework like Laravel and also has many libraries. And they are also open-source.

Weakness of PHP

Poor security: Inexperienced code writings and outdated practices can harm the system easily. Issues like SQL injections, and XSS (cross-site scripting) can occur if codes are not detailed written.

Less support for modern development practices: PHP not always support for latest and advanced features like other programming languages do. For example, JavaScript's frameworks like React, Next.js and Vue.js have more features and interactive, real-time applications.

Emphasizing only web development: While PHP may be good choice for web development, it may not be as good as other programming languages when using for different purposes. For example, data science, data mining and machine learning. Also, there are more useful, and robust frameworks and libraries in other programming languages.

References for strength and weakness of PHP

(epamanywhere, 2024) (geeksforgeeks, 2022)

Strength of Java

Platform independence: Java can be run on any device that has a Java Virtual Machine (JVM) without depending on OS. This makes Java portable while being a popular choice for learners and developers.

Rich APIs: Java has extensive libraries and enormous APIs specialized for each task. For example, utilities, networking, and I/O, etc. Although Java may be hard but by using those APIs can help faster and easier to develop a program.

Scalability and Versatility: Java is mainly used in enterprise-level programs but also suitable for small programs. Not only Java is scalable but also versatile including web, mobile, enterprise, cloud-based, big data and etc.

Numerous frameworks and libraries: Java provide many frameworks specialized with each field. For example, Spring for web, Hibernate for ORM, Spring Cloud for microservices and clouds, etc. This makes Java a good choice even in modern days.

Weakness of Java

Complexity: For some learners Java is hard and complex to learn since it has harder syntax than other languages like JavaScript and Python.

Memory Consumption: Java require significant memory space and take more memory usage than any other languages.

Performance: Java has poor and slower performance than native languages like C, C++. This is due to memory consuming, garbage collection, and runtime environment.

References for strength and weakness of Java

(data flair, n.d.) (geeksforgeeks, n.d.) (Rafalski, 2023)

3.1.7 Comparison of Programming Languages

Criteria	PHP	Java
Learning and Syntax	Has easy and simple syntax especially for web development. And also, a good choice for beginners	Complex syntax and hard to learn. Object oriented principles will require a lot. And may take more to become proficient.
Use Cases	Suitable for small to medium web development.	Prefer for large-scale and enterprise level development.
Frameworks	Has popular web frameworks such as Laravel, Symfony, and CodeIgniter.	Has robust frameworks like Spring, Hibernate, and JavaServer Faces (JSF), and widely used in enterprise environments.
Community and support	Has large and active community providing resources, forums and libraries	Has strong community with extensive documentation, libraries especially for large-scale enterprise level.
Security	Known as weak security vulnerabilities in past but modern frameworks emphasize security.	More secure due to strong type system and include exception handling and emphasize security.

3.1.8 Recommendation of Programming Languages

For small e-commerce system website like 'Tempest Books' PHP would be a better choice. Since they will need to add more functions and changes in future. For example, design changes, adding new functions, improving user experiences. Also, PHP is easy to understand and able to write HTML, CSS in one file. PHP is more flexible in web development due to simpler syntax, dynamic typing, and ease of integration with web servers. And PHP is easier to deal with web hosting since it has wider range web hosting options than Java. It is easier to add more functions and changing in PHP than making changes in Java. Robust framework like Laravel is also available to support PHP. Moreover, developing with PHP is more cost effective and fewer time consumption and better suitable with DSDM method than Java.

3.1.9 Databases

MySQL

MySQL is an open-source relational database management system (RDBMS) which can be used for data organizing and management. MySQL is one of the most popular database systems and being open-source helps has large community support. It is based on structured query language (SQL) that allows user to manipulate and manage the relational database (having tables and relations). MySQL is used with programming languages like PHP, Python, Java and others to create dynamic web systems. It uses client-server architecture letting user perform database related processes from graphical user interface (GUI). MySQL is used in various environments where easy data storage and retrieval are needed and widely used in content management system (CMS), e-commerce platforms, and data warehouses.

MongoDB

MongoDB is a popular open-source NoSQL database that store data in JSON (non-relational) document. Unlike relational databases, it uses collections (which are analogous to tables) and documents (similar to rows, but in JSON-like format) to store data. MongoDB is widely used in modern web applications and suited for content management, real-time analytics, mobile application and more. It is also flexible and scalable and fast iteration life cycle since it uses schemaless design. MongoDB has a large and active community support and provided by rich ecosystem of tools and libraries.

3.1.10 Strength and Weakness of Databases

Strength of MySQL

Ease of use: MySQL is well-known for its ease of installation and configuration. It is a popular for starters to learn databases since it uses relational database management system.

Performance: It is optimized for speed and has ability to perform under heavy loads and high-volume transactions. It is better when the databases are properly managed and structured.

Flexible and versatile: it supports on various platform and different operating systems. It can also be used in many different environments for various purposes. It is also compactable with many programming languages.

Scalability: when is well-structured and designed, it can handle increasing amount of large data as the system grows.

Weakness of MySQL

Limited features: MySQL historically had a large gap in functionality compared to other database systems although recent versions, add more functions and features to close up with the gap.

Security: its security features has been improved but still well-known for being vulnerable. Security threats may occur if it is not well-structured, configured and maintained. Regular update must be needed for security.

Concurrency: MySQL needs to be well-configured to handle large and complex data. If not performance problems like bottlenecks may occur and unable to run under heavy load.

References for strength and weakness of MySQL

(blue claw database developer resource, n.d.) (patches, 25)

Strength of MongoDB

Scheme-less design: MongoDB use flexible schema storing with JSON document. This make easier in dynamic evolutions and migrations.

Rich query language: It supports powerful query language allowing to use complex queries, aggregation pipelines (sequence of data), and indexing.

Scalability: It can handle large amounts of traffic and data. And allows for data distribution of data across clusters. MongoDB is suitable for a wide range of use cases and have high performance.

Weakness of MongoDB

Memory usage: MongoDB consume more memory compared to relational databases. This may due to indexing which are stored in memory, caching mechanisms and in-memory storage engine which will utilize RAM to improve performance.

Limited SQL support: it uses its query language which is Mongo Database Language (MQL). This requires to learn new syntax and techniques if transitioning from a relational database like a startup.

Complexity: Using MongoDB can be complex in operations such as monitoring, maintenance, and robust backup. This may due to sharding and replication of data clusters which means its distributed architecture.

References for strength and weakness of MongoDB

(knowledgenile, n.d.) (Colos, 2023) (Narayanan, 2015)

3.1.11 Comparison of Databases

Criteria	MySQL	MongoDB
Flexibility	Need predefined schema with tables and columns. Schema changes may be complex.	Scheme-less and can have collection of different structures, flexible for evolving data models.
Use Cases	Used in e-commerce platform, financial applications, CMS which require complex queries and transactions.	Used for rapidly changing data models or unstructured data such as real-time analytics, mobile applications, IoT.
Performance	Optimized for structured data and ACID compliance, ensuring consistency and transactional workloads.	Faster read write operations when dealing with unstructured or semi-structured data.
Community support	Has mature and extensive community.	Has growing community and rich ecosystem.
Size	Suitable for small and medium sized enterprises.	Can be used in large and enterprise applications.

3.1.12 Recommendation of Databases

For a medium-sized e-commerce website like 'Tempest Books', MySQL is a more suitable choice over MongoDB. Business requirements do not need complex queries and will need data consistency and integrity. Also, further developments will not need that much update in database. Maintaining data and their security is crucial for establishing customers' trust in the business. MySQL is easy to use and already familiar with the developer team. All these factors make MySQL suits for this project.

3.2 DSDM Feasibility (DSDM eight principles)

3.2.1 Focus on the Business Need

Project member leaders will focus on user requirements and prioritize the tasks. they need to analyze what they need most, and what the business needed. they will need to identify and set their aims and objectives in meetings.

3.2.2 Deliver on Time

They will need to finish their daily, weekly tasks based on Gantt chart. Gantt chart is used to clarify the durations and deadlines of each tasks of the whole project.

3.2.3 Collaborate

Joint meetings weekly meetings, daily checkup meeting will be applied for user involvement, collaboration and to increase members effective activities.

3.2.4 Never Compromise Quality

Testing ensures a function meets its functional requirements. Testing should be done after designing, system changes and after task combinations. Those testing are essential for the final product's quality.

3.2.5 Build Incrementally from Firm Foundations

Requirements will be broken down into timeboxes and will be prioritized into levels. During those steps considering incremental requirements will also help the project works incrementally. For example, design changes or adding new functions.

3.2.6 Develop Iteratively

After one timebox is finished, testing, evolution and review will be done for future developments or refinements, ensuring ongoing project success.

3.2.7 Communicate Continuously and Clearly

Meeting with stakeholders will need frequently. project members will also communicate continuously (for e.g. early meetings) get clearer objectives and work progresses with the help of visualized diagrams and clear documentations.

3.2.8 Demonstrate Control

There will be a demonstration to get reviews and feedback from stakeholders after each timebox is finished.

(Petit, 2024) (Buehring, 2023) (agilebusinessconsortium, n.d.)

3.3 Possible LESPI (Legal, Ethical, Social and Professional) Issues

3.3.1 Legal Issues

Data Protection: Data transactions, product detailed information, purchase and order information will need to be secured. Leaking information can ruin the reputation of the company's image. Also, leaking information like these will be illegal and against the laws.

Taxes: The company must pay the necessary taxes. Avoiding taxes can be suited and ruin the company business. Not only physical store's taxes but also technical taxes must be paid. Also, customers must pay taxes for buying products.

Using for Illegal Purposes: Some staffs may be using website for illegal purposes such as taking customer information, selling illegal things, prohibited products, sharing false information can be problem. The admins must sure their employees don't use the website for illegal purposes.

3.3.2 Ethical Issues

Intellectual Property: System's source code must be protected. While using system avoiding copyright, trademark, and patent data is also crucial. If they must be used giving proper credit to the owners will be needed.

Privacy: Some employees will be able to use the system like admins. But they must not search the customer account information and admin account information. These accounts contain important and valuable data, checking their information can break the privacy.

Weak Security: Having weak security can lead information to be leaked easily. This is big problem and have highest risk. This can loss customers and ruin the business completely.

3.3.3 Social Issues

Digital Divide: Some stuffs including admins may not be able to use the system diplomatically. They will need digital literacy and make sure they know how to use the system safety and diplomatically.

Online Behavior: Since the system is based online, there will be bad reviews, misinformation about the business and the system, and cyberbullying can happen as the system become popular.

3.3.4 Professional Issues

Collaboration: Suppliers' collaboration will need for further growth but in some case, they can act unprofessional acts which is not informing the company about stopping the collaboration. So, do the vice versa for the admins to suppliers. This kind of acts should not be happened.

Leaking Information: Company must need to make agreements with suppliers and stuffs to maintain the information of the business even they are not related to company anymore.

Chapter 4 Foundation

4.1 Target User

Type of User	Age	Computer skill/ Technology Literacy	Language skill (having English skills would be better)
Admin	25-40	Must have basic knowledge of technology and business-related technologies	Must understand technological terms and business terms
Suppliers	30-50	They need to understand email usage and basic website usage	Must understand business English
Customers	15-70	They will need to understand technological terms to use website	They can use language translation feature but understand English and tech terms would be better

4.2 Functional Requirements

4.2.1 Manage Book Purchase Functional Requirement (Time box 1)

1. Manage Admin (HL)
 - Register account (ML)
 - Account already exists - Email checking (LL)
 - Password length check (LL)
 - Check input fields null (LL)
 - Login (ML)
 - account authentication checking (HL)
 - Logout
2. Purchase Order Management (HL)
 - Create Purchase Order (ML)
 - Update Purchase Order (ML)
 - Read Purchase Order (ML)
 - Delete Purchase Order (ML)
3. Manage Supplier (HL)
 - Register (ML)
 - Account already exists - Email checking (LL)
 - Password length check (LL)
 - Check input fields null (LL)
4. Manage Book (HL)
 - Purchase Book (ML)
 - Book Quantity (ML)
 - Wholesale Price (ML)
 - Cancel Purchased Books (ML)

4.2.2 Manage Book Order Functional Requirement (Time box 2)

1. Manage Customer (HL)
 - Register account (ML)
 - Account already exists - Email checking (LL)
 - Password length check (LL)

- Check input fields null (LL)
 - Login (ML)
 - account authentication checking (LL)
 - Logout (ML)
2. Manage Book (HL)
- Order Books (ML)
 - Cancel Ordered Books (ML)
 - Number of Books (ML)
 - Retail Price (ML)

4.3 MOSCOW Prioritization

Functional	Must	Should	Could	Would
Manage Purchase	✓	-	-	-
Manage Order	✓	-	-	-
Manage Books	✓	-	-	-
User Authentication	✓	-	-	-
Searching and Filtering	-	✓	-	-
Manage Supplier	-	✓	-	-
Manage Category	-	✓	-	-
User Reviews and Rating	-	✓	-	-
Loyalty Program	-	-	✓	-
Customer Account Leveling	-	-	✓	-
Ads	-	-	-	✓
Cryptocurrency Payment	-	-	-	✓

4.3.1 Must

Must	Justification
Manage Purchase	It is a must for managing the purchasing books from suppliers.
Manage Order	It is necessary for both customers and admins to manage order information.
Manage Books	It is crucial to manage books data. For example, price, categories.
User Authentication	It is important and essential function for login into website.

4.3.2 Should

Should	Justification
Searching and Filtering	This should be included in website for faster searching of books.
Manage Supplier	The admin should be able to manage and contact with supplier for performing and confirming of purchases.
Manage Category	It should be included for better searching and managing of books.
User Reviews and Ratings	This should be in the system for popularity and reputation.

4.3.3 Could

Could	Justification
Loyalty Program	This could help the business income more and company popular.
Customer Account Leveling	This could increase the external income for the company and also can give satisfaction to customers.

4.3.4 Won't

Won't	Justification
Ads	This won't be in the system for avoiding bad reviews and better user experience.
Cryptocurrency Payment	This feature won't be in the system for now since cryptocurrencies are not popular and widely using in Myanmar.

References for MOSOCW prioritization: (productplan, n.d.) (agilebusiness, n.d.) (atlassian, 2023)

4.4 Non-Functional Requirements

4.4.1 Performance

The system has calculated data sizes, managed files, and coding to run faster. Data types' size will be calculated and defined in MySQL to reduce unnecessary spaces. Files, folders and used images are well managed to run faster. Unnecessary codes and unused code lines are deleted and consistency coding are used better performances.

4.4.2 Scalability

Good programming algorithms and database logics are analyzed and implemented. Fault tolerance and resilience are also considered for better scalability. As mentioned, codes are also optimized and tested if the system can handle much workload.

4.4.3 Reliability

There will be backup server in case the main server crashes. Data backups, testing and recovery plans will be involved for website consistency and reliability.

4.4.4 Security

The system will force users to add strong passwords for better security. Data management will be different with account roles for data integrity. Security protocols like HTTPS will be used to ensure data are encrypted. There will be more updates and patches to improve security.

4.4.5 Usability

UI/UX are studied properly for better usage experiences for users. Colors used are also represent and associated with book and knowledge. Simple design is used for various types of users especially for customers. Recognizable icons, some interactive designs, useful features and functions will be used.

4.4.6 Maintainability

Since the system used DSDM, it will also be maintainable and can add more features in future. There will also be code comments for readability and documentations to understand the system easily.

4.4.7 Compatibility

This system will be able to perform on any type of browsers. It will also be able to used on any devices including desktop, laptop, tablet and mobile. User has to have network, computer or phone and a browser to use the website.

4.4.8 Legal & Regulatory

This system follows laws and legislation to assure that company is reliable and not using unethical technology. Legal and regulatory and company policies are also described in customer-sided website.

4.5 Time Box Plan

4.5.1 Timebox 1: Manage Book Purchase Process Time box

Manage Book Purchasing Process Time-box			
Start Date	April 30, 2024		
End Date	May 20, 2024		
Task	Duration	Start Date	End Date
Function Requirement	1	April 30, 2024	April 30, 2024
Use Case	1	May 1, 2024	May 1, 2024
Class Diagram	1	May 2, 2024	May 2, 2024
Sequence Diagram	1	May 3, 2024	May 3, 2024
High-level & Low-level Prototype	1	May 6, 2024	May 6, 2024
Coding	7 days	May 7, 2024	May 15, 2024
Functional Testing	1	May 16, 2024	May 16, 2024
Usability Testing	1	May 17, 2024	May 17, 2024
Time Box Summary	1	May 20, 2024	May 20, 2024
Key Deliverables (Output)			
Design			
<ul style="list-style-type: none">• Use Case Diagram for Book Purchasing Process• Entity Relationship Diagram (ERD) for Book Purchasing Process• Class Diagram for Book Purchasing Process• Sequence Diagram for Book Purchasing Process• Low Level and High-level Prototype			
Coding			
Admin Authentication Supplier Authentication Manage Book (CRUD) Manage Purchase (CRUD) Manage Categories (CRUD) Show Listing			

Testing

Functional Testing
 Unit Test Document
 Usability Test Document
 Test Case and Test Script for Time-box 1

4.5.2 Timebox 2: Book Ordering Process Time box

Manage Book Ordering Process Time-box			
Timebox Name	Duration	Start Date	End Date
Start Date		May 21, 2024	
End Date		June 10, 2024	
Task	Duration	Start Date	End Date
Function Requirement	1	May 21, 2024	May 21, 2024
Use Case	1	May 22, 2024	May 22, 2024
Class Diagram	1	May 23, 2024	May 23, 2024
Sequence Diagram	1	May 24, 2024	May 24, 2024
High-level & Low-level Prototype	1	May 27, 2024	May 27, 2024
Coding	7 days	May 28, 2024	June 4, 2024
Functional Testing	1	June 6, 2024	June 6, 2024
Usability Testing	1	June 7, 2024	June 7, 2024
Time Box Summary	1	June 10, 2024	June 10, 2024

Key Deliverables (Output)

Design

- Use Case Diagram for Book Purchasing Process
- Entity Relationship Diagram (ERD) for Book Purchasing Process
- Class Diagram for Book Purchasing Process
- Sequence Diagram for Book Purchasing Process
- Low Level and High-level Prototype

Coding

Admin Authentication

Supplier Authentication
Manage Book (CRUD)
Manage Purchase (CRUD)
Manage Categories (CRUD)
Show Listing

Testing

Functional Testing
Unit Test Document
Usability Test Document
Test Case and Test Script for Time-box 1

4.6 Risk Management

4.6.1 Risk

Risk is something that will or may occur during the operation time of a system. Even though project teams put their hard work to their product, there may be risks in future since they cannot able to predict from every perspective. There are different types of risks in various fields such as technology, business, medical and other professionals.

4.6.2 Risk management

Even though risks can occur in unpredictable or predictable time, having a plan for those can reduce the impact of risks. Risk management can be vary depending on teams, projects, product, field, etc.

4.6.3 Risk monitoring

After risk management plans are decided or planned, monitoring risks and implementing faster recovery plan will be able to reduce impact.

4.6.4 Risk avoidance

Even though having risk managing plans and risk monitoring are applied, some risks with little impact may be able to avoid for bigger risks.

4.7 Identification of possible risks

4.7.1 Technical risks

This may include errors and bugs, poor coding, not working functions and features, and so on. These technical risks will need better solution before deploying the system in real life.

4.7.2 Client risks

Clients may not have strong technology knowledge and they may face problems with website changes since the project is based on DSDM. This can lead to lower user involvements too.

4.7.3 Security risks

Security risks like attackers' problem, customers' password security and client's awareness can occur too. Although those risks can be forecasted and prepared, not only these security risks but also unpredictable security problems can occur.

4.7.4 Third party risks

Suppliers' problems, software problems, delivery problems and some other systems, properties or companies can be considered as third parties. Risks can occur from them too.

References for risks

[IBM, 日付不明] (team, n.d.) (marquette uni, n.d.)

4.8 Risk Matrix (High-Medium-Low)

Risk	Probability	Impact	Proactive Action	Reactive Action	Risk Owner
Scalability Issues	Medium	Medium	Scalability plan should be done before development stages	Use another server, hosting or optimize system architecture	Project manager or Tempest Books owner
Poor Documentation	High	Low	Encouraging team to write daily or task by task documentations	Monitor and update regularly	Project manager and developer team
Changes in requirement	Low	High	Make agreements and define detailed scope before project	Calculate and renegotiate with client and adjust like budget and timeline	Project Manager or owner
Weak technology knowledge	Medium	High	Include workshops and knowledge sessions	Create training camp or workshops	Project Manager and owner
Cyber security	High	High	Use anti-virus software and add security features or educate users	Backup data and store separately	Users (admins)
Unforeseen Risks	Low	Medium	Brainstorm and analyze possible problems and have plans for it	Have incident recovery plan and backup plan	Tempest Books owner
Natural disaster	Low	Medium	Analyze and plan for like backup for devices (eg. Pc)	Migrate another server, use backup devices	Owner

4.9 Critical Success Factors for current project

4.9.1 Effective management

Management is the most important in every field. Admins or top management will need to make best managing plans such as resource allocation, staffs managements (human resource), successful decision making and so on. They will need to monitor the implemented projects and products too. For this project, project manager will need to decide how the staffs will be leveled and give them tasks by tasks. Manager will need to negotiate about salaries, meeting times, meeting places, project making places too. Without proper and effective management plan, the project's result will not be successful or not even finished properly.

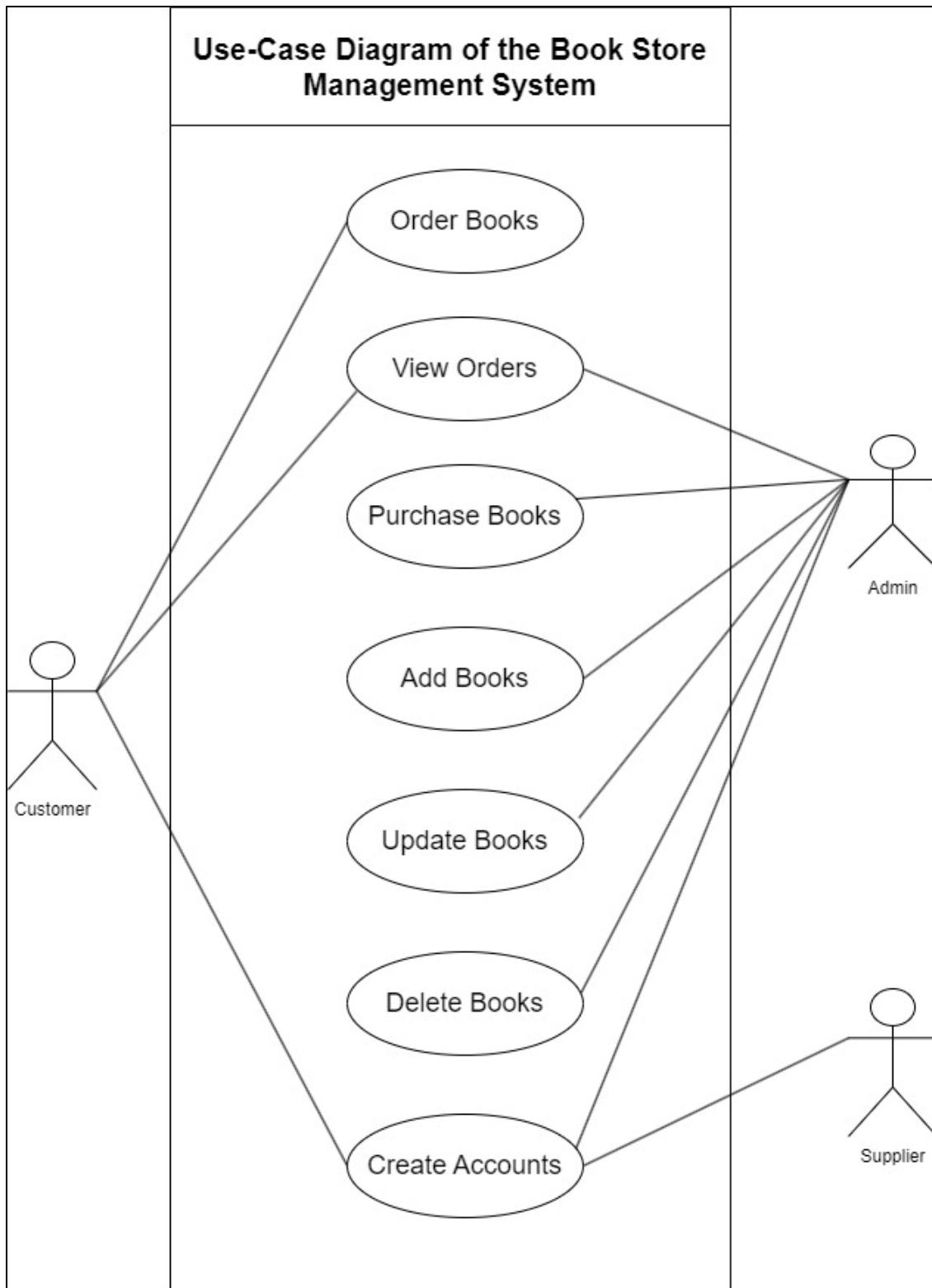
4.9.2 Proper training

Before the product is operated, there will be training for staffs to understand the product. They will be taught about how to use this website safe and secure. Also, they will be taught about how not to break the privacy and policies. They will be trained even if they know about technologies since systems are not always the same and understanding the product would be a necessary for a staff. During training, only staffs with the position to use this system will be involved. Not only staffs but also the admins will be trained before deploying. These training will be effective and a good preparation when the system is used in real life since there are unseen problems and risks may occur.

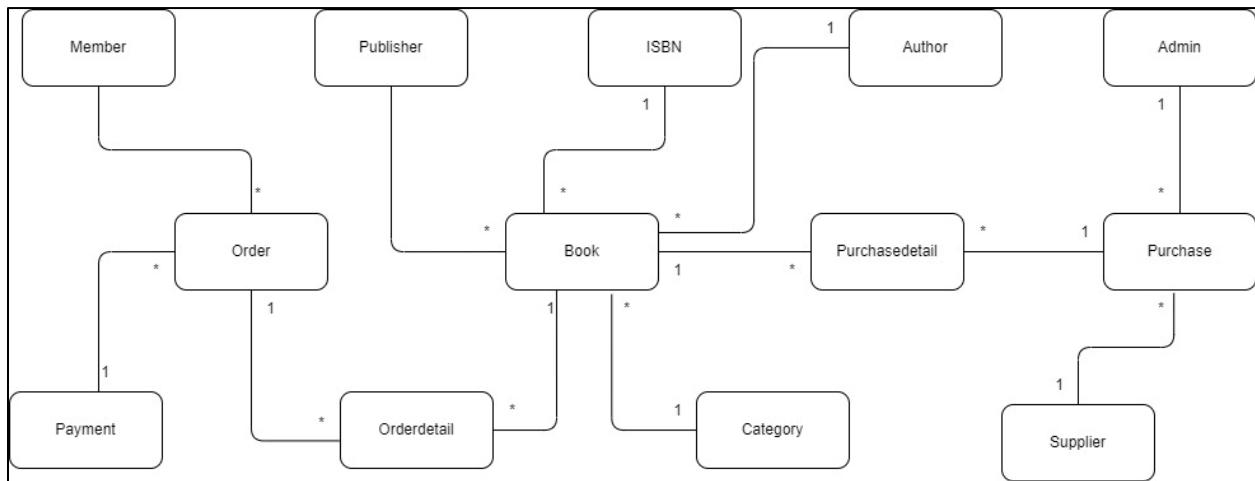
4.9.3 Successful final product

Not only human requirements are necessary for successfulness of the project but also full functioning system is necessary. The final product must be full filed the requirements, tested, and also involved some factors like security which the end user might know must be implemented to become a successful project. Final product must also be designed attractively to lure the customers too. All these functional, and non-functional factors are crucial to achieve a successful final project

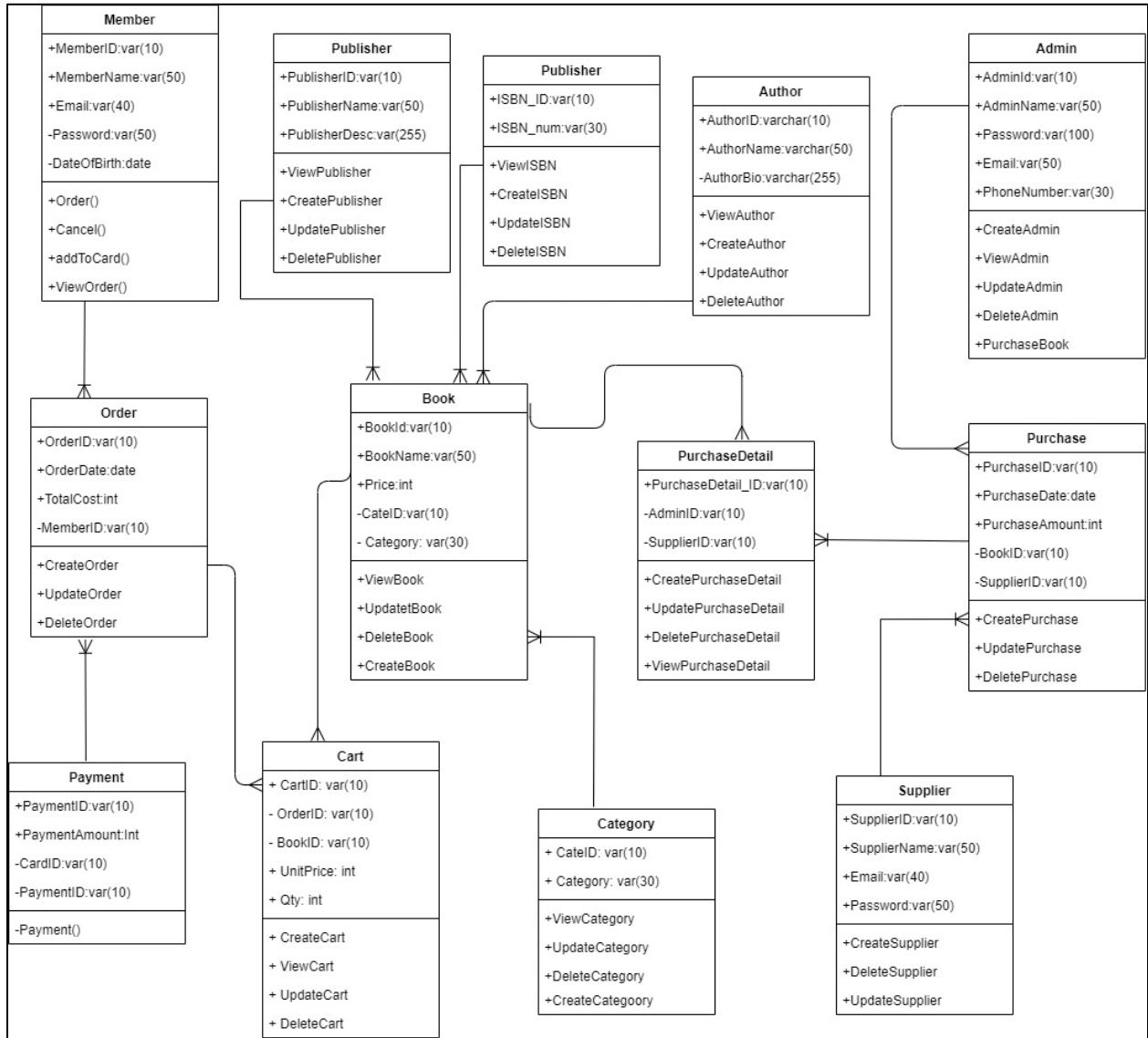
The Whole System Use Case



The whole system initial class diagram (entity relationship diagram)



The Whole Class Diagram



Chapter – 5

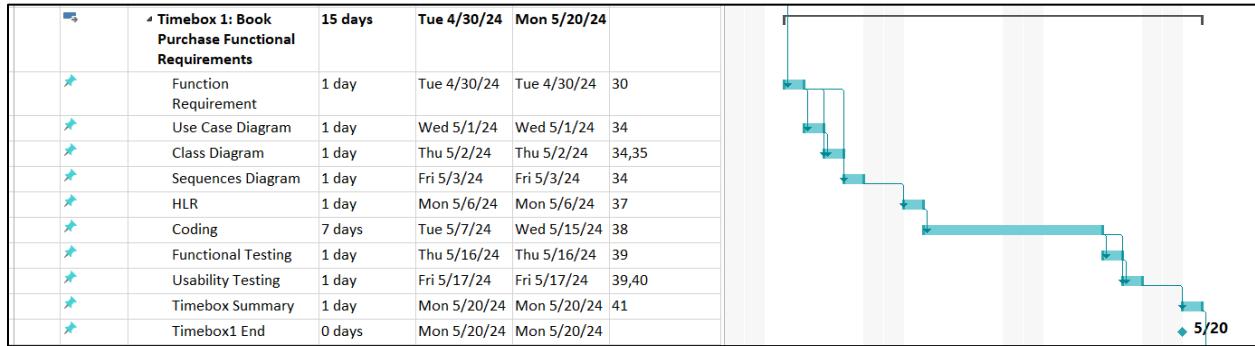
Exploring and

Engineering

Chapter 5 Engineering

5.1 Time-Box 1: Manage Book Purchase Time-Box Development

Project Plan for Time-Box 1



Project Plan Gantt Chart for Time Box 1

5.1.1. Functional Requirements List

1. Manage Admin (HL)

- Register account (ML)
 - Account already exists - Email checking (LL)
 - Password length check (LL)
 - Check input field null (LL)
- Login (ML)
 - account authentication checking (HL)
- Logout (ML)

2. Purchase Management (HL)

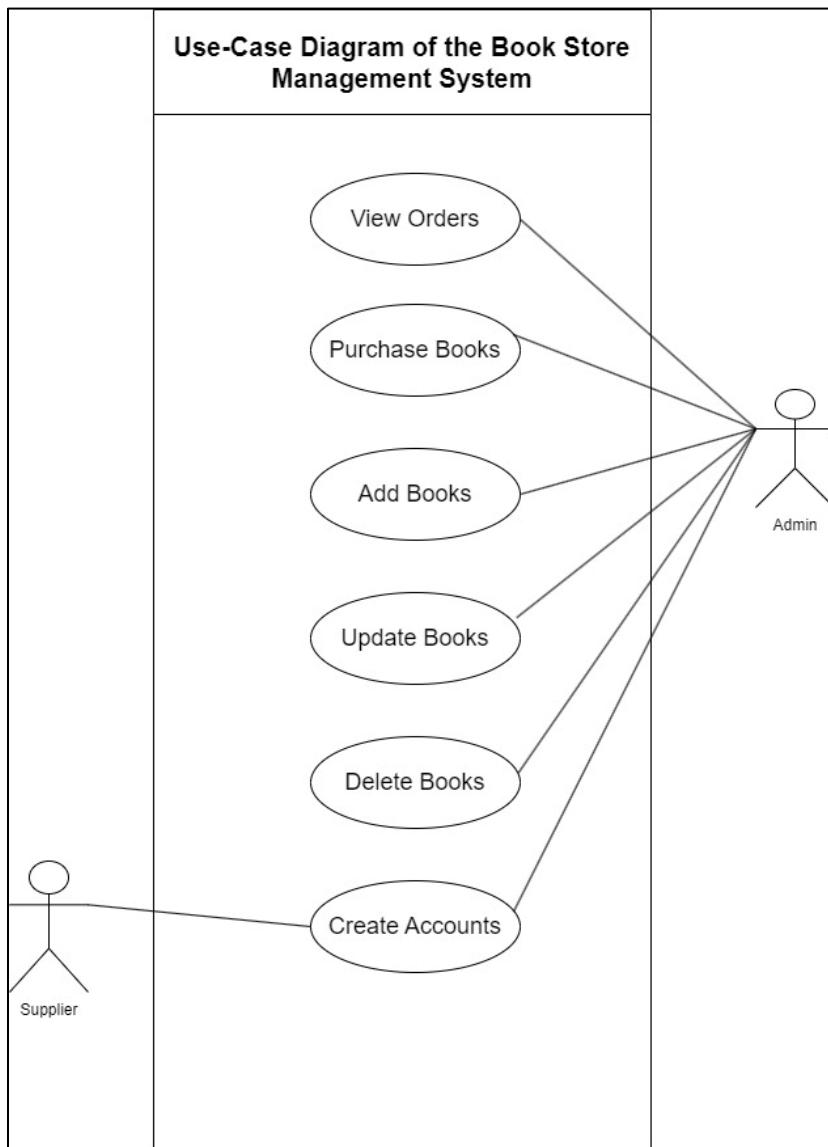
- Create Purchase Order (ML)
- Update Purchase Order (ML)
- Read Purchase Order (ML)
- Delete Purchase Order (HL)

3. Manage Supplier (HL)

- Register (ML)
 - Account already exists - Email checking (LL)
 - Password length check (LL)
 - Check input field null (LL)
- Login (ML)

- Account authentication checking (HL)
 - Logout (ML)
4. Manage Book (HL)
- Purchase Book (ML)
 - Book Quantity (ML)
 - Wholesale Price (ML)
 - Cancel Purchased Books (ML)

5.1.2 Use Case Diagram for Time Box – 1



Use Case Description

Use Case Name	Create Accounts
Actor	Admin
Flow of Event	Fill the necessary information from registration form and then click register button.

The remaining use case descriptions are in Appendix.

5.1.3 Screen Design

Create an account

Admin ID

Admin Name

Admin Email

Admin Password

Admin Phone Number

Save

[Already have an account? Login here](#)

Low level prototype for admin registration

Admin Login

Admin Email

Admin Password

[Don't have an account? Sign up here](#)

Low level prototype for admin login



Admin

Admin Dashboard

- Home
- Book
- Author
- ISBN
- Category
- Publisher
- Order Info
- Purchase Info
- Book List
- Log Out

Book List									
Book ID	Book Name	Book Quantity	Price	Book Description	Author Name	Publisher Name	ISBN Code	Category	Action
Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
Data	Data	Data	Data	Data	Data	Data	Data	Data	Data

Author List			
Author ID	Author Name	Author Biography	Action
Data	Data	Data	Data
Data	Data	Data	Data

ISBN List		
ISBN ID	ISBN Num	Action
Data	Data	Data
Data	Data	Data

Low level prototype for admin dashboard



Admin

Admin Dashboard

- Home
- Book
- Author
- ISBN
- Category
- Publisher
- Order Info
- Purchase Info
- Book List
- Log Out

Add Book Information

Book ID	<input type="text"/>
Book Name	<input type="text"/>
Book Quantity	<input type="text"/>
Book Price	<input type="text"/>
Book Description	<input type="text"/>
Book Image	<input type="file" value="Browse"/>
Publisher Name	<input type="text"/>
ISBN Code	<input type="text"/>
Category	<input type="text"/>
Author Name	<input type="text"/>
<input type="button" value="Submit"/>	

Low level prototype for adding book information

Admin

Admin Dashboard

- Home
- Book
- Author
- ISBN
- Category
- Publisher
- Order Info
- Purchase Info
- Book List
- Log Out

Add Category Information

Category ID

Category Name

Submit

Low level prototype for adding category information

Admin

Admin Dashboard

- Home
- Book
- Author
- ISBN
- Category
- Publisher
- Order Info
- Purchase Info
- Book List
- Log Out

Add ISBN Information

ISBN ID

ISBN Code

Submit

Low level prototype for adding ISBN information

Admin

Admin Dashboard

- Home
- Book
- Author
- ISBN
- Category
- Publisher
- Order Info
- Purchase Info
- Book List
- Log Out

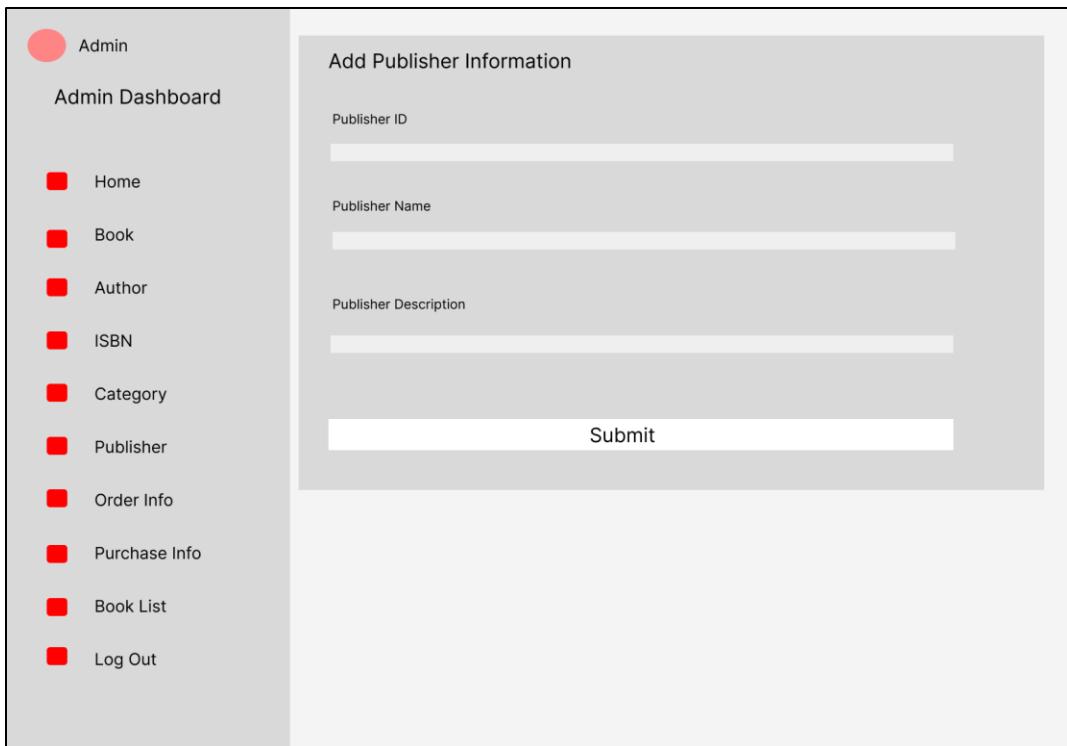
Add Publisher Information

Publisher ID

Publisher Name

Publisher Description

Submit



Low level prototype for adding Publisher information

Purchase Info

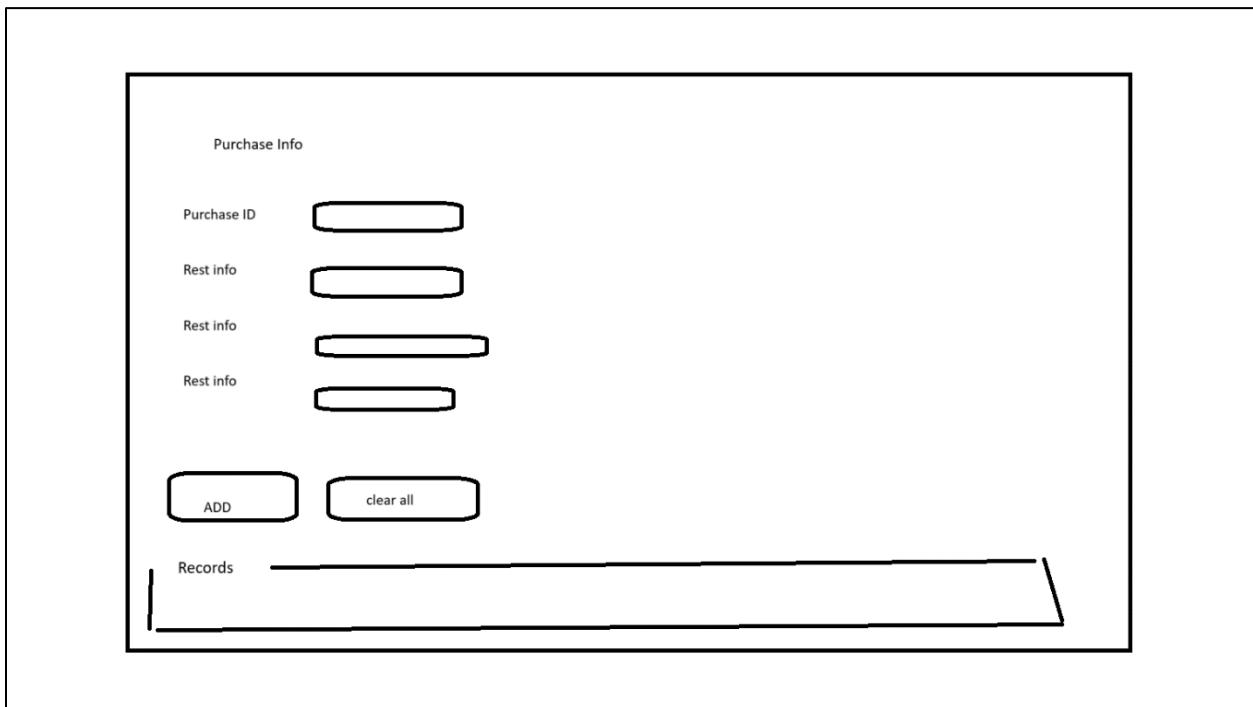
Purchase ID

Rest info

Rest info

Rest info

Records



Low level prototype of book purchasing page

Search option

search by ID

search by Date From to

search by status pending

Result

ID	DATE	SUPPLIER NAME	TOTAL AMOUNT/	GRAND TOTAL	STATUS	DETAIL
DATA	DATA	DATA	DATA	DATA	DATA	DATA

Low level prototype of searching purchase data

Purchase Order Detail Report for POID : P-00001

Purchase_ID	P-00001	Status	0								
Purchase Date	2024-06-02	Report Date	2024-06-08								
SupplierName	DawPoc	AdminName	Thi Han								
<table border="1"> <thead> <tr> <th>BookName</th> <th>Pur_Price</th> <th>Pur_Quantity</th> <th>Sub-Total</th> </tr> </thead> <tbody> <tr> <td>P-00001</td> <td>\$5000</td> <td>20</td> <td>100000</td> </tr> </tbody> </table>				BookName	Pur_Price	Pur_Quantity	Sub-Total	P-00001	\$5000	20	100000
BookName	Pur_Price	Pur_Quantity	Sub-Total								
P-00001	\$5000	20	100000								
Total Amount : 0 USD Tax Amount (VAT) : 0 USD GrandTotal : 0 USD											
<input type="button" value="Confirm"/>											

Low level prototype of Print result

5.1.4 Iteration for screen design

Iteration 1

User registration design and sign up button's text was not favored by the admins so the screen design is changed.

(Iteration 1) Screen Design for Register Form

Before

The image shows a mobile-style registration form titled "Create an account". The form fields are as follows:

- Admin ID:** AID-00002
- Admin Name:** emelia_erickson24
- Admin Email:** emelia_erickson24
- Admin Password:** (Redacted)
- Admin Phone Number:** emelia_erickson24

At the bottom left is a yellow "Save" button, and at the bottom center is a link "Already have an account? [Login here](#)".

After



The Tempest Books logo features a stylized tree with yellow leaves and a sunburst effect above it, with the text "Tempest Books" in a yellow sans-serif font below.

Create an account

Admin ID

Admin Name

Admin Email

Admin Password
 ⓘ

Admin Phone Number

Sign Up

Already have an account? [Login here](#)

Color is fixed and button text is changed.

Iteration 2

User request toggle button for password in register form so that they can check it before submitting

(Iteration 2) for password toggle button

Before

A screenshot of a password input field. The label "Admin Password" is at the top. Below it is a rectangular input field containing five dots (".....") as a placeholder. The input field has rounded corners and a thin black border.

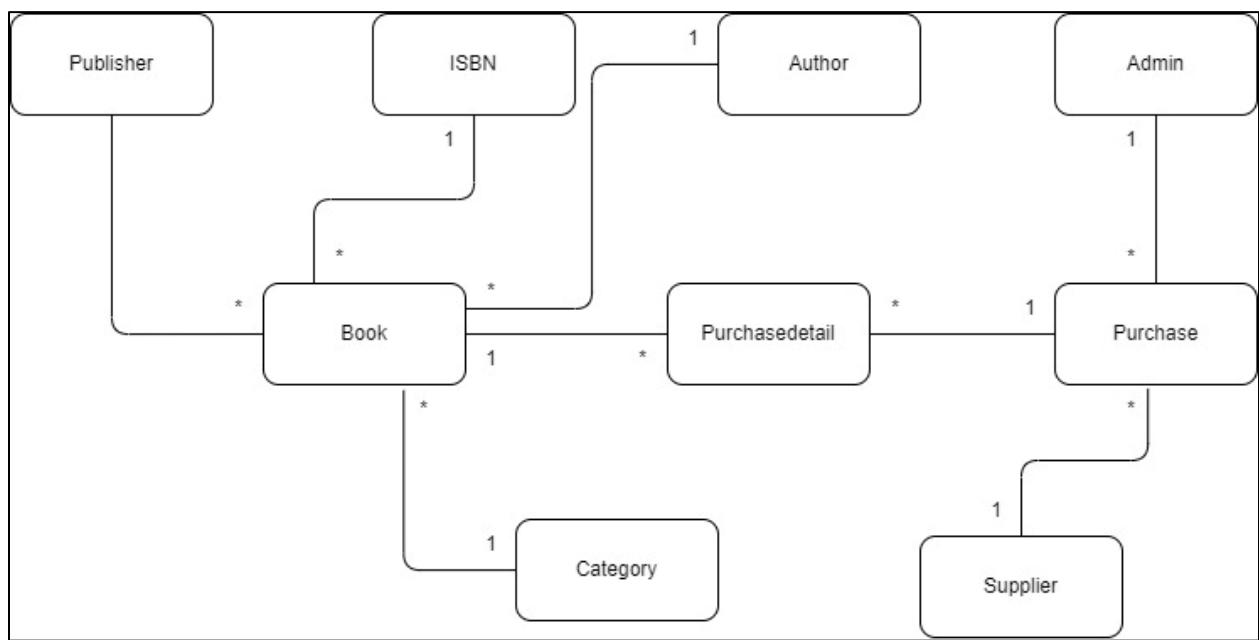
After

A screenshot of a password input field. The label "Admin Password" is at the top. Below it is a rectangular input field containing six dots ("....."). To the right of the input field is a small circular icon with an eye symbol, which is a toggle button for password visibility.

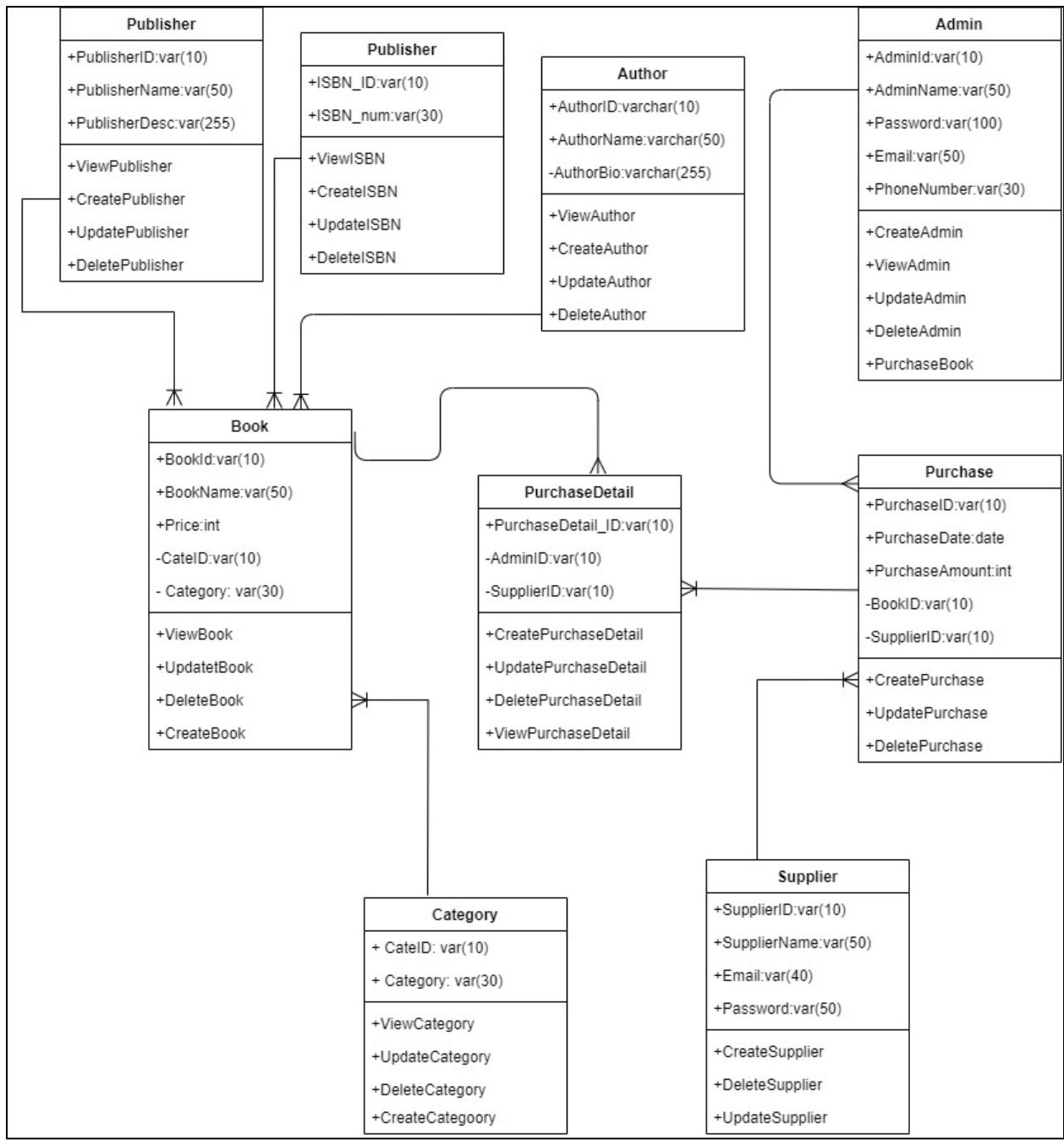
A screenshot of a password input field. The label "Admin Password" is at the top. Below it is a rectangular input field containing the password "sadfsdraf". To the right of the input field is a small circular icon with an eye symbol, which is a toggle button for password visibility.

5.1.5 Class Diagram

Initial Class for Time-Box 1



Detailed Class for Time-Box 1

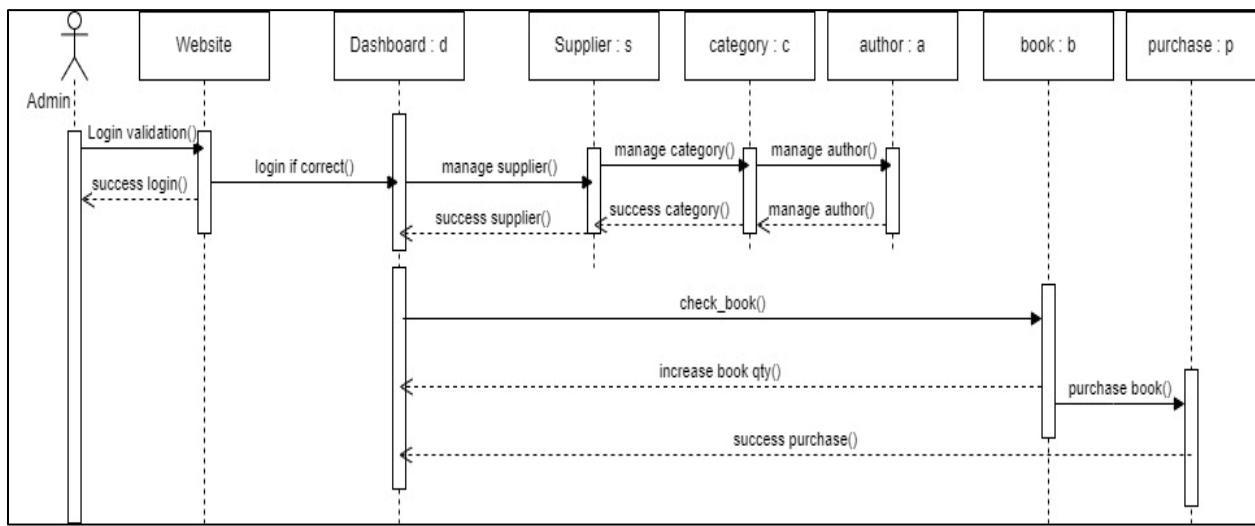


Detail Class Definitions

Class Name	Admin
Attributes	AdminID, AdminName, AdminPassword, AdminEmail, AdminPhnum
Operation	Register (), Create(), Delete(), Update (), Search ()
Description	<< The Role class is used to do register for admin to control the system.>>

Remaining class definitions are in Appendix section

5.1.6 Sequence Diagram



Sequence diagram for admin purchasing process

Sequence Diagram Description

Admin has to login to the website in order to make purchase process. According to the sequence diagram, after login into the website, admin will reach to the dashboard if the validation is correct. Admin can manage supplier for book purchasing. Admin can also manage category, author (including ISBN and author too which are not described in diagram). After managing those, admin can able to check the book then purchase book. After purchasing the success message will show up and the quantity of books will increase.

5.1.7 Functional Testing

Test plan

Module 1: Admin registration form

Test Script	Description	Date	Tester
1.1	Testing input box can be null or not	24 th June 2024	Thi Han Naing
1.2	Testing password's view can be seen and unseen or not work	24 th June 2024	Thi Han Naing
1.3	Testing strong password is required or not	24 th June 2024	Thi Han Naing
1.4	Testing login link work or not	24 th June 2024	Thi Han Naing

Unit Test 1		Test Case: admin registratiton form	Designed by: Thi Han Naing	
Data Source: Admin Table		Objective: To test the data entry in Admins registration form	Tester: Thi Han Naing	
Test Case	Description	Test Procedure	Expected Result	Actual Results
1.1	Testing input box can be null or not	'Sign Up' button is clicked, all information must be saved	Show 'Please fill out this field' message.	See Fig.1.1 & 1.2

Before



Create an account

Admin ID

Admin Name

Admin Email

Admin Password
 (

Admin Phone Number

Sign Up

Already have an account? [Login here](#)

Fig 1.1

After



Create an account

Admin ID

Admin Name

Admin Email

Admin Password
 ! Please fill out this field.

Admin Phone Number

Sign Up

Already have an account? [Login here](#)

Fig 1.2

The remain test script can be seen in Appendix

Module 2: Adding information form

Book information adding page will be tested as an example since the other pages are the same.

Test Script	Description	Date	Tester
1.1	Testing input box can be null or not	24 th June 2024	Thi Han Naing
1.2	Testing drop downs can work or not	24 th June 2024	Thi Han Naing
1.3	Testing image can be chosen or not	24 th June 2024	Thi Han Naing

Unit Test 2		Test Case: Add book information form	Designed by: Thi Han Naing	
Data Source: Book Table		Objective: To test the data entry in Add Book information form	Tester: Thi Han Naing	
Test Case	Description	Test Procedure	Expected Result	Actual Results
1.1	Testing input box can be null or not	'Submit' button is clicked, all information must be saved	Show 'Please fill out this field' message.	See Fig.2.1 & 2.2

Before

Add Book Information

Book ID BID-00009	Book Name <input type="text"/>
Book Quantity 30	Book Price 10000 <div style="border: 1px solid #ccc; padding: 2px; margin-left: 10px;">! Please fill out this field.</div>
Book Description Minna no nihongo N5 for Japanese Starters	Book Image <input type="button" value="Choose File"/> images.jpg
Choose Author Name thi han	Choose Publisher Name Serene Scribe Publishing
Choose ISBN Code 9780553380958	Choose Category Learning
<input type="button" value="Submit"/>	

Fig 2.1

After

Add Book Information

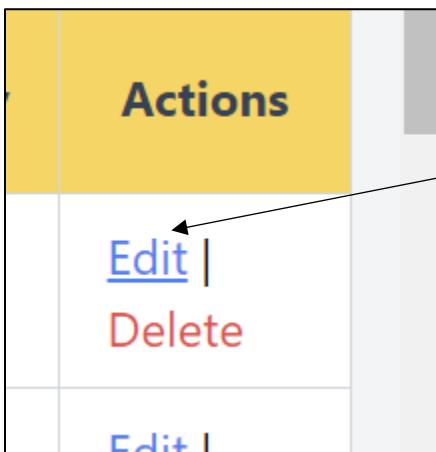
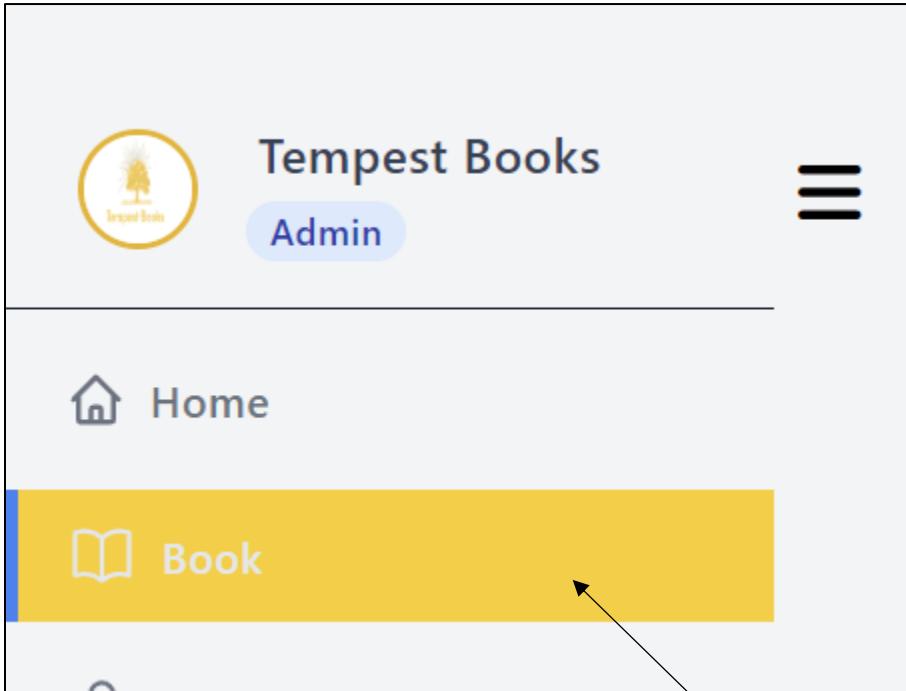
Book ID BID-00010	Book Name Minna no nihongo N5
Book Quantity 30	Book Price 10000
Book Description Minna no nihongo N5 for Japanese Starters	Book Image <input type="button" value="Choose File"/> images.jpg
Choose Author Name thi han	Choose Publisher Name Serene Scribe Publishing
Choose ISBN Code 9780553380958	Choose Category Learning
<input type="button" value="Submit"/>	

Fig 2.2

The remain test script can be seen in Appendix

5.1.8 Usability Testing

Visibility of system status



For the users to know that they will be link to other pages, there are hover functions to improve the visibility of the system. With these features they can confirm the system will show another page.

Match between system and real world

Tempest Books
Admin

≡

- Home
- Book
- Author
- ISBN
- Category
- Publisher

SETTINGS

- Order List
- Purchasing
- Purchase List
- Logout

For better understanding and how the system work, the suitable icons are used. Users will easy understand with those icons.

User confirmation

To prevent accident clicking there will be alert box to ask confirmation from the user.

The screenshot shows a web-based application interface for 'Tempest Books' with a sidebar on the left and three main content areas on the right.

Left Sidebar:

- Logo: A circular logo with a tree and the text 'Tempest Books'.
- User Information: 'Tempest Books' and 'Admin'.
- Navigation Links:
 - Home
 - Book
 - Author
 - ISBN
 - Category
 - Publisher
 - SETTINGS**
 - Order List
 - Purchasing
 - Purchase List
 - Logout** (highlighted with a yellow background)

Right Content Areas:

- Book List:** A table with columns 'Book ID' (yellow header), 'Book Name', 'Quantity', 'Price', and 'Description'. Two rows are visible:
 - BID-00001: Daw Poe Teaches (36 units, 5000 price, description: daw poe poe pa pa aung)
 - BID-00002: Buggy the Clown (3 units, 5000 price, description: Buggy the Clown Arc One Piece)
- Author List:** A table with columns 'Author ID' (yellow header) and 'Author Name'. Three rows are visible:
 - AUID-00001: poepoe
 - AUID-00002: thi han
 - AUID-00003: JK Rowling
- ISBN List:** A table with columns 'ISBN ID' (yellow header) and 'ISBN Num'. One row is visible:
 - IsID-00001: 000000

A dark gray confirmation dialog box is overlaid on the top right, containing the text 'localhost says' and 'Are you sure you want to log out?' with 'OK' and 'Cancel' buttons.

Consistency and standard

All the edit and delete are design same for consistency. And list tables' designs are also the same for standardization.

ISBN List		
ISBN ID	ISBN Num	Actions
IsID-00001	567898765433456	Edit Delete
IsID-00002	1234567891011	Edit Delete
IsID-00003	0987654321123	Edit Delete

Category List		
Category ID	Category	Actions
CTID-00001	Comedy	Edit Delete
CTID-00002	Action	Edit Delete
CTID-00003	Horror	Edit Delete

Publisher List		
----------------	--	--

Error Prevention

For the user to not accidentally delete data, there will be alert box for it.

Book List			localhost says					Actions			
Book ID	Book Name	Q	Are you sure you want to delete?			OK	Cancel	Author Name	Publisher Name	ISBN Code	Category
BID-00003	One Piece Romance Dawn Arc	6	10000	Romance Dawn Arc of One Piece	Eiichiro Oda	Inkwell Press	9780316015844	Japanese Manga	Edit Delete		
BID-00004	Souma Tome Japanese N1 Goi	6	5000	Souma Tome Japanese N1 Goi For learners	thi han	ABC Publishing	9780375831003	Learning	Edit Delete		

5.1.9 Iteration for Usability Testing

Iteration 3

Client request to add all placeholder values in boxes so they can see clearly what they will need to do. This will also prevent wrong input values and improve user quality.

Iteration 3 (Error Prevention)

Before

Add Book Information

Book ID <input type="text" value="BID-00009"/>	Book Name <input type="text" value="Book Name"/>
Book Quantity <input type="text" value="Enter Book Quantity (1 to 50)"/>	Book Price <input type="text" value="Enter Book Price (5000 to 10,000,000)"/>
Book Description <input type="text"/>	Book Image <input type="file" value="Choose File No file chosen"/>
Choose Author Name <input type="text" value="poepoe"/>	Choose Publisher Name <input type="text" value="Daw Poe Publishing"/>
Choose ISBN Code <input type="text" value="567898765433456"/>	Choose Category <input type="text" value="Comedy"/>
<input type="button" value="Submit"/>	

After

Add Book Information

Book ID <input type="text" value="BID-00009"/>	Book Name <input type="text" value="Book Name"/>
Book Quantity <input type="text" value="Enter Book Quantity (1 to 50)"/>	Book Price <input type="text" value="Enter Book Price (5000 to 10,000,000)"/>
Book Description <input type="text" value="Book Description"/>	Book Image <input type="file" value="Choose File"/> No file chosen
Choose Author Name <input type="text" value="poepoe"/>	Choose Publisher Name <input type="text" value="Daw Poe Publishing"/>
Choose ISBN Code <input type="text" value="567898765433456"/>	Choose Category <input type="text" value="Comedy"/>
<input type="button" value="Submit"/>	

5.1.10 Time Box Summary

Work done

Purchasing process for admin is finished in this time box. Creating information for book like categories, authors, ISBNs, publishers are developed in this time box. After these, adding information for books is developed. After creating necessary information, purchasing processes are developed. First searching and listings are developed. Then supplier registration is created. Before confirmation for orders and purchase is developed, purchase process which includes purchase and purchase details is developed.

Issues

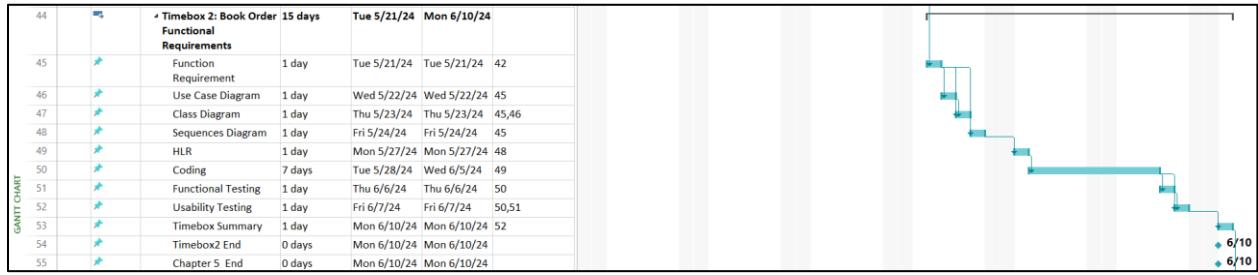
While developing this time box, specific functions for listing, purchasing process and confirmation process got errors a lot.

Solution

Checking detail codes, reading documentations, searching other people codes solved these problems.

5.2 Time Box 2 Ordering Time-Box Development

Project Plan for Time Box 2

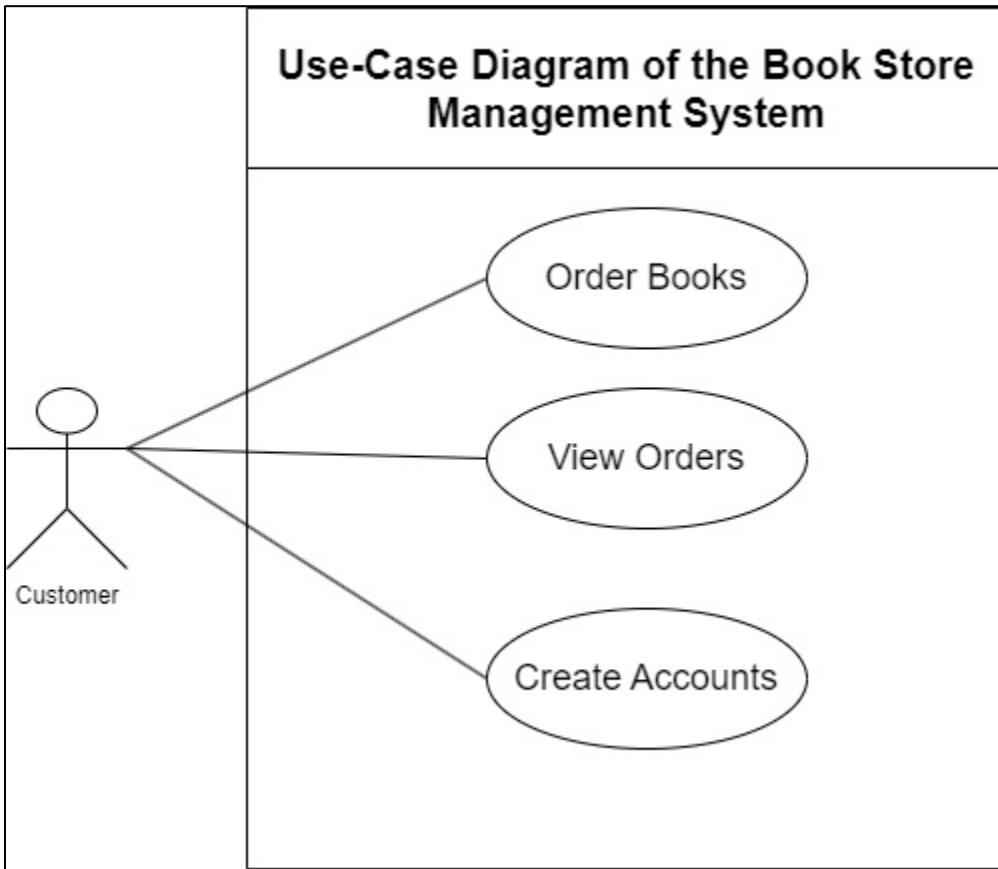


Project plan Gantt Chart for Time Box 2

5.2.1 Functional Requirement List

1. Manage Customer (HL)
 - Register account (ML)
 - Account already exists - Email check (LL)
 - Password length check (LL)
 - Login (ML)
 - account authentication checking (LL)
 - Logout (ML)
2. Manage Order (HL)
 - Order Books (ML)
 - Cancel Ordered Books (ML)
 - Number of Books (ML)
 - Retail Price (ML)

5.2.2 Use Cases Diagram for Time-Box 2



Use Case Description

Use Case Name	Order Books
Actor	Customer
Flow of Event	Customers will need to select see more and go to book detail page then set the quantity and then go to checkout before making payment.

Use Case Description

Use Case Name	View Orders
Actor	Customer

Flow of Event	Customers will be able to check the information in the cart before making the payment. They can then decide delete, continue shopping or make payment.
----------------------	--

Use Case Description

Use Case Name	Create Accounts
Actor	Customer
Flow of Event	Fill the described information from registration form and then click register button.

5.2.3 Screen Design

Customer side screen design does not have prototype, it will be change iteratively always depending on customers taste. These designs are current satisfied design chosen by admins. These designs are changed depending on them and changing repeatedly and only have small changes in each change. Also, there are no enough time for making prototype and since it will not be used high level designs are created.

Customer Registration Form

The screenshot shows a web-based customer registration form titled "Create an account". The form is contained within a modal window. At the top of the modal, there is a header with the title "Create an account". Below the header, there are five input fields: "Customer ID" (containing "CID-00004"), "Customer Name" (containing "Emelia Erickson"), "Customer Email" (containing "customer12@gmail.com"), "Customer Password" (containing a series of asterisks), and "Customer Date of Birth" (containing "mm/dd/yyyy"). Below these fields is a "Save" button. At the bottom of the modal, there is a link "Already have an account? Login here". The background of the page shows a navigation bar with links for Home, Books, Author, ISBN, Category, Publisher, Book Order, Sign In, and a yellow "Sign Up" button.

Screen design for customer registration process

Order Books



One Piece Romance Dawn Arc

Author: Eiichiro Oda

Price: 10000

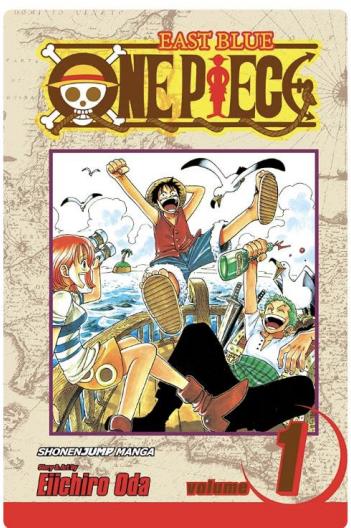
Category: Japanese Manga

Quantity: 6

See More

Click this see more button

Book Details: One Piece Romance Dawn Arc



Book Name: One Piece Romance Dawn Arc

Author Name: Eiichiro Oda

Publisher Name: Inkwell Press

ISBN: 9780316015844

Category: Japanese Manga

Each Price: 10000

Stock Quantity: 6

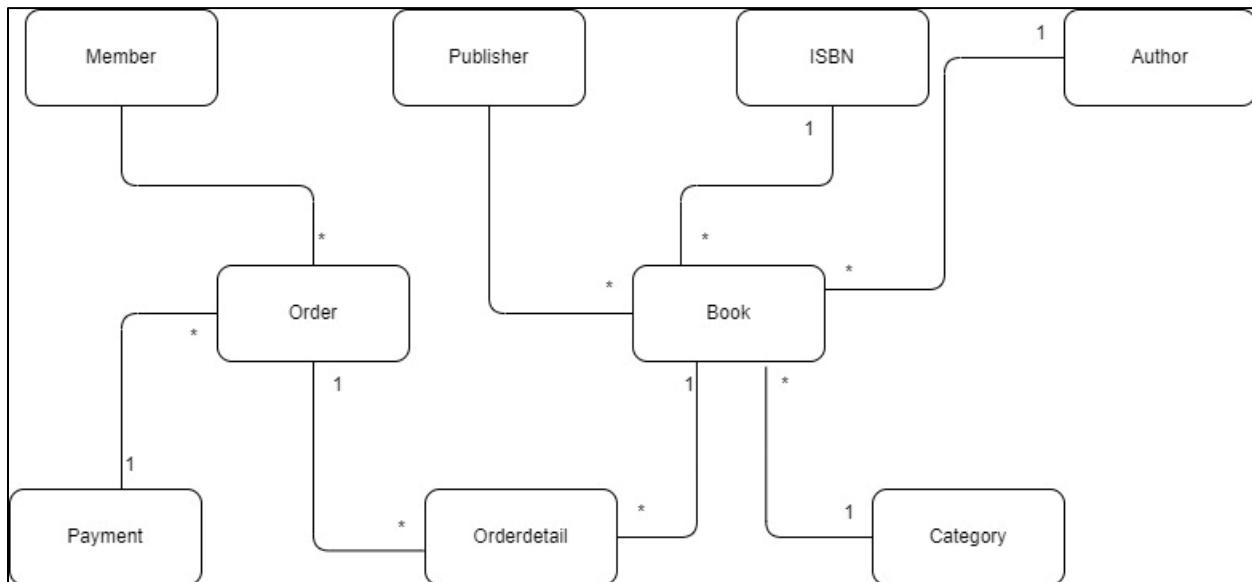
Buy Quantity:

Here customers will need to add quantity and then click add to cart

And then they can proceed to make payment by clicking it

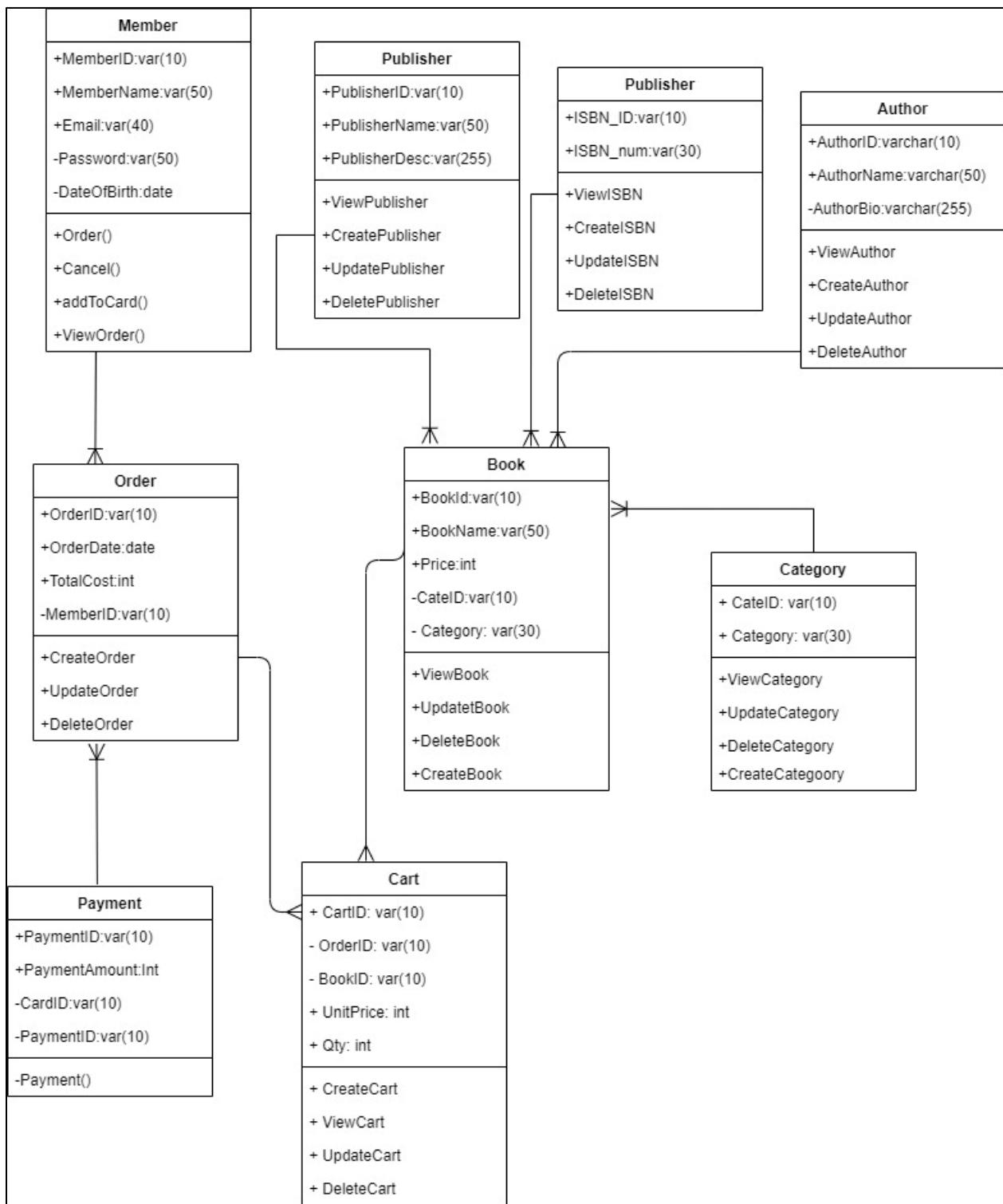
5.2.4 Class Diagram

Initial Class Diagram



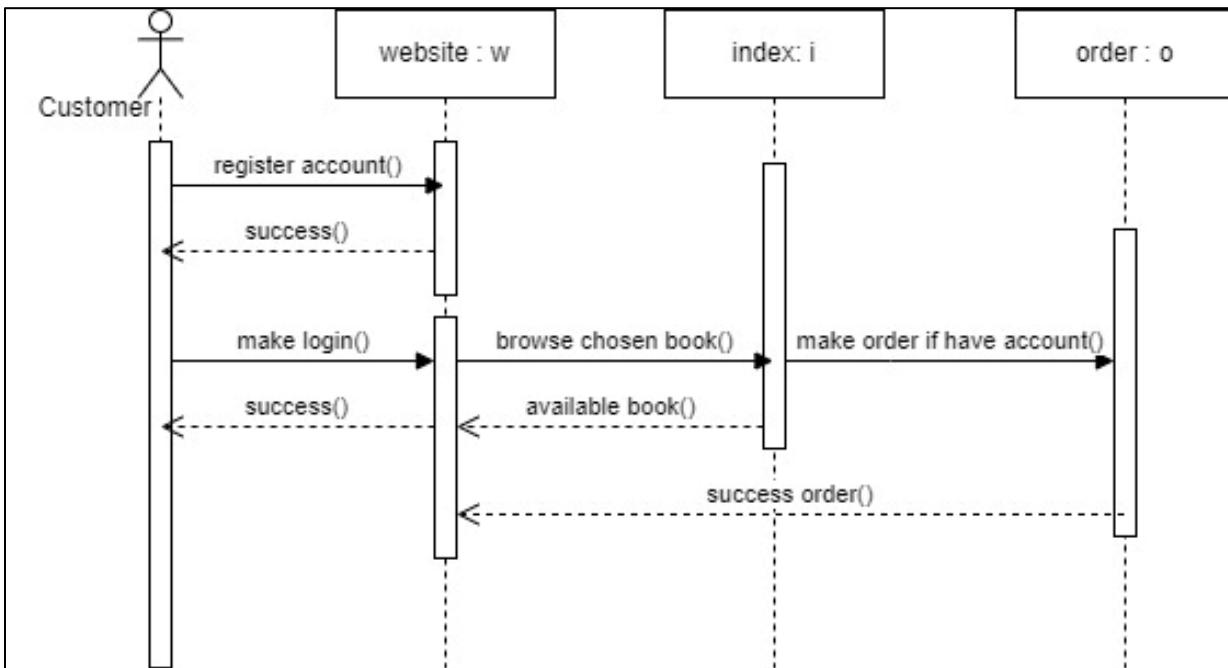
Initial class diagram for customer ordering process

Detailed Class Diagram



Detailed class diagram for customer ordering process. Note – orderdetail is described as cart in detailed diagram.

5.2.5 Sequence Diagram



Sequence diagram for customer book ordering process

Sequence Diagram Description

According to the above sequence diagram flow, the customer must have account and login to make orders. The above diagram shows sequence of these activities. Firstly, customer have to register an account, then login to website. Customer can able to browse the book that are available on the website. If the chosen book is available, then customer can able to make order. The success order message will return to the website.

5.2.6 Functional Testing

Module 1: Customers registration form

Test Script	Description	Date	Tester
1.1	Test customer name can be null or not.	16 th Dec 2023	Thi Han Naing
1.2	Test customer email can be null or not.	16 th Dec 2023	Thi Han Naing
1.3	Test customer password can be null or not.	16 th Dec 2023	Thi Han Naing

Unit Test 1		Test Case: Customer Registration form	Designed by: Thi Han Naing	
Data Source: Customer table		Objective: To test the data entry in customer registration form	Tester: Thi Han Naing	
Test Case	Description	Test Procedure	Expected Result	Actual Results
1.1	Testing customer name can be null or not.	'Submit' button is clicked. Customer name is blank.	Show 'Please fill out this field' message.	See Fig.1.1 & 1.2

Before

Create an account

Customer ID

Customer Name

Customer Email

Customer Password

Customer Date of Birth

 CALENDAR

Save

Already have an account? [Login here](#)

After

Create an account

Customer ID
CID-00004

Customer Name
Emelia Erickson

Customer Email  Please fill out this field.

abc123@gmail.com

Customer Password
.....

Customer Date of Birth
07/03/2024 

Save

Already have an account? [Login here](#)

Unit Test 1	Test Case: Customer Registration form	Designed by: Thi Han Naing
Data Source: Customer table	Objective: To test the data entry in customer registration form	Tester: Thi Han Naing

Test Case	Description	Test Procedure	Expected Result	Actual Results
1.2	Testing customer email can be null or not.	'Submit' button is clicked. Customer email is blank.	Show 'Please fill out this field' message.	See Fig.1.3 & 1.4

Before

The screenshot shows a 'Create an account' form with the following fields:

- Customer ID:** CID-00004
- Customer Name:** Yui Hirasawa
- Customer Email:** customer12@gmail.com (This field is highlighted in red, indicating it is empty)
- Customer Password:** (Redacted)
- Customer Date of Birth:** 07/03/2024
- Save Button:** A yellow button labeled 'Save'.
- Login Link:** Already have an account? [Login here](#)

Fig 1.3

After

Create an account

Customer ID
CID-00004

Customer Name
Yui Hirasawa

Customer Email
customer12@gmail.com

Customer Password
.....

Customer Date of Birth
07/03/2024

Save

Already have an account? [Login here](#)

Customer Password Please fill out this field.

Fig 1.4

Unit Test 1		Test Case: Customer Registration form	Designed by: Thi Han Naing	
Data Source: Customer table		Objective: To test the data entry in customer registration form	Tester: Thi Han Naing	
Test Case	Description	Test Procedure	Expected Result	Actual Results

1.3	Testing customer password can be null or not.	'Submit' button is clicked. Customer password is blank.	Show 'Please fill out this field' message.	See Fig.1.5 & 1.6
-----	---	---	--	-------------------

Before

The screenshot shows a 'Create an account' form with the following fields:

- Customer ID:** CID-00004
- Customer Name:** Yui Hirasawa
- Customer Email:** abc123@gmail.com
- Customer Password:** (Field is empty, indicated by five dots)
- Customer Date of Birth:** 07/03/2024
- Save** button (Yellow)
- Text at the bottom: Already have an account? [Login here](#)

Fig 1.5

After

Create an account

Customer ID

Customer Name

Customer Email

Customer Password

Customer Date ! Please fill out this field.

 CALENDAR

Save

Already have an account? [Login here](#)

Fig 1.6

5.2.7 Usability Testing

Categorizing for faster searching

The screenshot shows a dark-themed website for a book store. At the top, there is a navigation bar with links for Home, Books, Author, ISBN, Category, Publisher, Book Order, and a signed-in user section with 'Signed' and 'Sign Out' buttons. Below the navigation, a banner reads 'Welcome to our Book Store' with the subtext 'Discover a wide range of books and enhance your reading experience.' A search bar with a dropdown menu is centered. The dropdown menu is open, showing a list of categories: Comedy, Action, Horror, Documentary, Fantasy, Romance, Japanese Manga, Learning, Biography, PG-13, For Kids, and R-18. To the left of the dropdown, there is a section titled 'Books' with a thumbnail image of a manga-style book cover. Below the thumbnail, the title 'One Piece Romance Dawn Arc' is listed, along with its description, author (Eiichiro Oda), publisher (Inkwell Press), and ISBN (9780752841844). To the right of the dropdown, there are four book thumbnails arranged in a row. From left to right: 'Souma Tome Japanese N1 Goi' by thi han, 'How to find money' by poepoe, and 'Harry Potter and the Philosopher Stone' by JK Rowling. The third book's title is partially visible as 'Robert T. kiyosaki's'. Each book entry includes its title, author, description, publisher, and ISBN.

Searching books with categories will allow users to find the type of books they want faster. This function group the list of books so that customers can browse the favored genre and not necessary to know the identity of the book for example Author name.

Searching with input

The screenshot shows a web-based book search application. At the top, there is a navigation bar with links for Home, Books, Author, ISBN, Category, Publisher, and Book Order. On the far right of the navigation bar are 'Signed' and 'Sign Out' buttons. Below the navigation bar, the main content area has a title 'Search Books by Author'. A search form is present with a label 'Enter Author:' and a text input field containing 'poepoe'. A yellow 'Search' button is located below the input field. The results section is titled 'Search Results' and displays a single book entry. The book cover is purple with white text, showing 'ଶ୍ରୀରାତନ୍ତ୍ସମ୍ବନ୍ଧିତ କେବଳିକାରୀଙ୍କ ପାଇଁ ଏହାକିମ୍ବାନ୍ଦିଲ୍ ରାଜାଙ୍କାରୀଙ୍କ ପାଇଁ' and 'Robert T. Kiyosaki's RICH DAD POOR DAD'. Below the cover, the title 'How to find money' and subtitle 'The ways to find money' are listed. At the bottom of the result card, it says 'Author: poepoe'.

This will help user when searching books with inputs. But this must be necessary to enter specific data. That's why this function is used only for searching with author name and ISBN only.

5.2.8 Time Box Summary

Work done

Customer order, order details and related cart functions are created in this time box.

Customer will able to use the website search books with author name, book name, category list, ISBN codes, publisher list. Customer will also be able to order books after creating account and also be able to manage order information in order detail system.

Issues

While developing this timebox, searching features, listing features were difficult. Making order detail functions were also difficult when it had to make calculating functions. After creating functions, applying them while making the website responsive were biggest solution. Creating diagrams were a little difficult too. For example, sequence diagram.

Solution

These issues were fixed by reading documentations, consulted with AIs, and giving plenty of time.

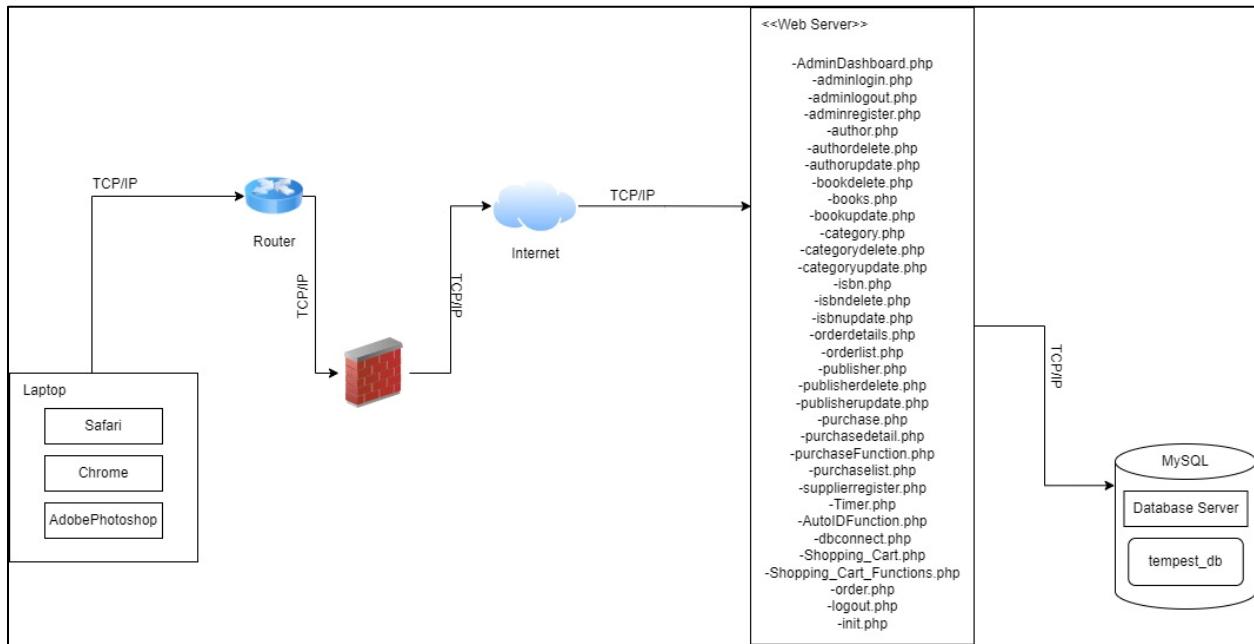
No remaining timebox

Chapter – 6

Deployment

Chapter 6 Deployment

6.1 Deployment Diagram



Explanation

This is the UML diagram for deployment. It is used as a system architecture to graphically represent how software and hardware components will be physically deployed in real life. The network has main key factors called key nodes which are routers, firewalls, servers and they are collected by TCP/IP protocol. In order to deploy this system, hosting provider has been chosen. Domain name is also registered. After testing, debugging or refining of the code, database connection has been updated for public environment. Then, related php files have been uploaded to public server via through local computer. Since, the system has been on public network, firewall is used to protect from attackers and to improve security of the system.

6.2 Data Migration

6.2.1 Data to Migrate

Explain

Data migration is the process of moving data from one system to another. During migration, multiple data may be included depending on the system. The table below show the related data that will be migrated to host database. Database from phpMyAdmin will be exported and moved to new database from the hosting server. After configuration, the system will be test if it working well or not.

Time Box	Master Data	Transaction Data
Time box 1: Manage Purchase time box.	Admin, supplier, category, books, isbn, authors, publisher, purchase, purchasedetails	Purchase, purchasedetails
Time box 2: Manage Order Time-box.	Customers, books, order, orderdetails	Order, orderdetails

Plan

Time Box	Data to Migrate	Duration	Start Date	End Date	Responsible Person
Time box 1: Manage Purchase time box.	<ul style="list-style-type: none">• Admin• Supplier• Books• Category• ISBN• Authors• Publisher• Purchase• Purchasedetails	1 day	June 12, 2024	June 12, 2024	Admin & project manager

Time box 2: Manage Order Time-box.	<ul style="list-style-type: none"> Customer Books Order Orderdetails 	1 day	June 13, 2024	June 13, 2024	Admin & project manager
--	--	-------	---------------	---------------	-------------------------

6.3 Training

6.3.1 Plan

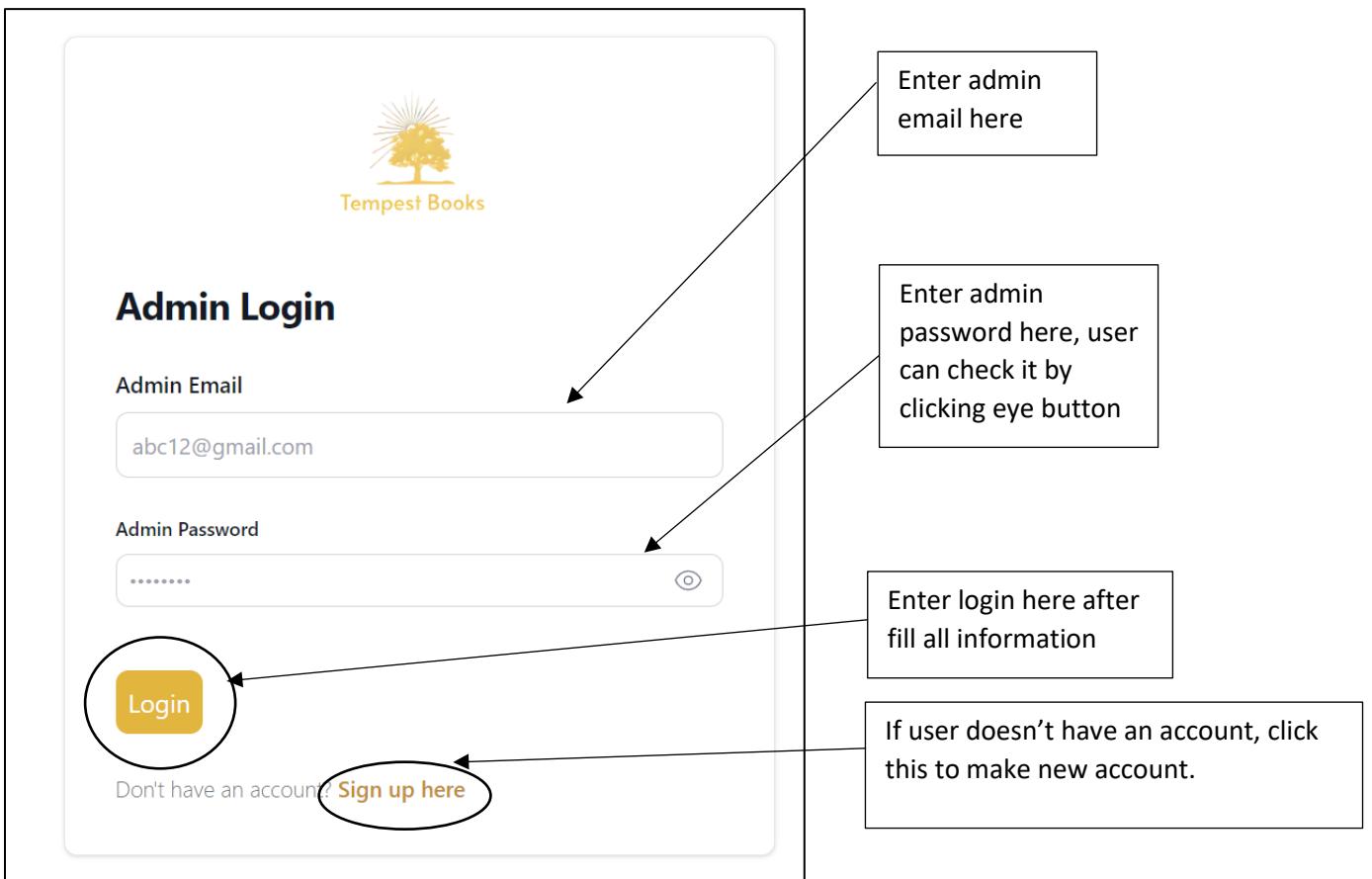
There will be training plan after negotiating time with people who will be using the website. For the time box 1, they will be trained strictly since this side of the system is very important. For the time box 2, they will mostly be trained about how to maintain the integrity of customer data.

There will be more additional knowledge trainings for like security and technical knowledge.

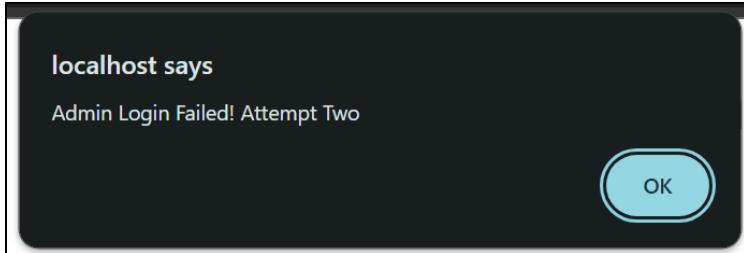
No	Content	Trainee	Start Date	End Date	Venue	Time
1.	Time Box 1 <ul style="list-style-type: none"> Admin Supplier Books Category ISBN Authors Publisher Purchase Purchasedetails 	Admins, staffs	June 14, 2024 June 17, 2024	June 14, 2024 June 17, 2024	Tempest Books	10am-1pm
2.	Time Box 2 <ul style="list-style-type: none"> Customer Books Order Orderdetails 	Admins, staffs	June 18, 2024	June 18, 2024	Tempest Books	10am-1pm
3.	Additional knowledge Security Maintenance Backups Hardware usages	Admins, Staffs	June 19, 2024	June 19, 2024	Tempest Books	10am-1pms

6.3.2 Manual

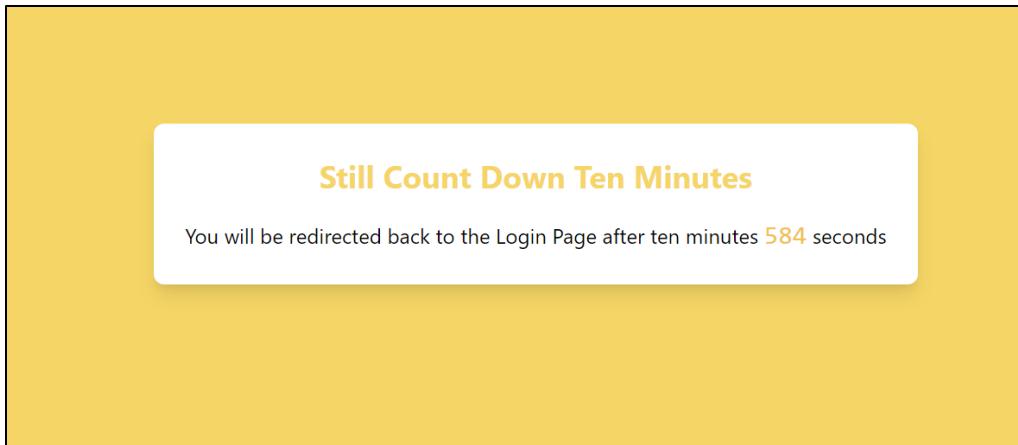
Admin Process



This is the first page that company sided user will see when entering into website. This is the login page.



This is the alert box when user enter wrong password.



This is the timer when login failed three times.



Create an account

Admin ID

Admin Name

Admin Email

Admin Password

 (

Admin Phone Number

Sign Up

Already have an account? **Login here**

Admin ID will be auto incremented.

Enter admin name here.

Enter admin email here

Fill the password. The password has some policies for strong password.

Here admin will need to enter his phone number

And enter sign up to submit all information.

If already have an account, click this to proceed to login page

This is the registration page.

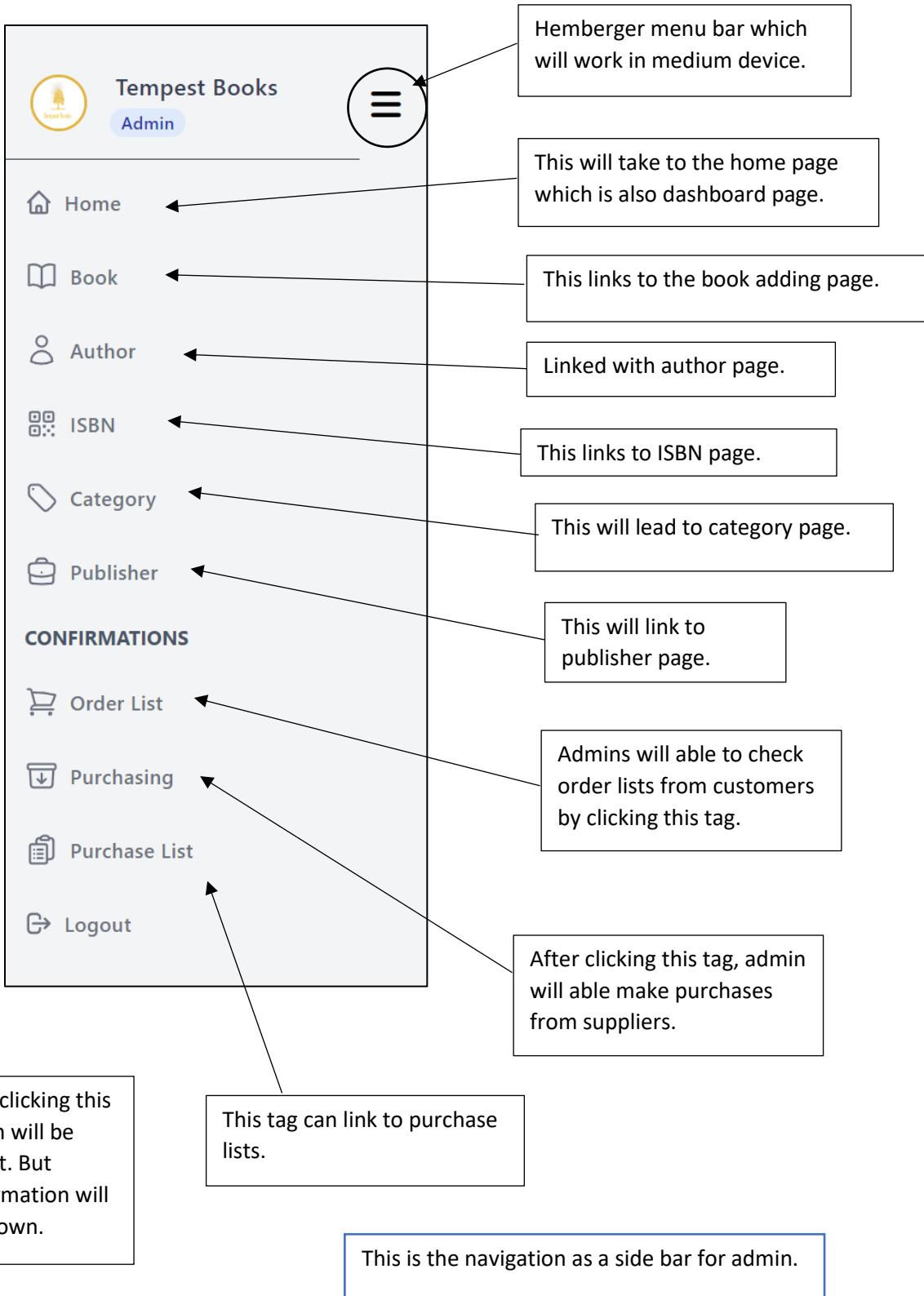
Book List										
	Book ID	Book Name	Book Quantity	Price	Book Description	Author Name	Publisher Name	ISBN Code	Category	Actions
	BID-00003	One Piece Romance Dawn Arc	6	10000	Romance Dawn Arc of One Piece	Eiichiro Oda	Inkwell Press	567898765433456	Japanese Manga	Edit Delete
	BID-00004	Souma Tome Japanese N1 Goi	6	5000	Souma Tome Japanese N1 Goi For learners	thi han	ABC Publishing	9780375831003	Learning	Edit Delete
Author List										
	Author ID	Author Name			Author Biography			Actions		
	AUID-00001	poepoe			kkkk			Edit Delete		
	AUID-00002	thi han			Thi Han book			Edit Delete		
	AUID-00003	JK Rowling			abc			Edit Delete		
ISBN List										
	ISBN ID		ISBN Num				Actions			
	IsID-00001		567898765433456				Edit Delete			
	IsID-00002		1234567891011				Edit Delete			
	IsID-00003		0987654321123				Edit Delete			
Category List										

This is admin dashboard.

The usage of admin dashboard will be explained in two parts.

The first part is side bar navigation which will be explained in below.

The other part is explanation about listings.



Author List			
Author ID	Author Name	Author Biography	Actions
AUID-00001	poepoe	kkkk	Edit Delete
AUID-00002	thi han	Thi Han book	Edit Delete
AUID-00003	JK Rowling	abc	Edit Delete

Author List will be exemplified for every listing

This is the listing from admin dashboard.

Admins can check the respective information and their related data.

Edit and delete tags for changing information if needed.

Add Author Information

Author ID Author Name

AUID-00008 Lwin Min Thant

Author Biography

Enter the author name.

Enter author biography.

Adding of author information page will be exemplified for category, ISBN, and publisher pages since their designs and data needed to be added are same.

Submit

Add Book Information

Book ID	Book Name
BID-00009	Book Name
Book Quantity	Book Price
Enter Book Quantity (1 to 50)	Enter Book Price (5000 to 10,000,000)
Book Description	Book Image
Book Description	Choose File No file chosen
Choose Author Name	Choose Publisher Name
poepoe	Daw Poe Publishing
Choose ISBN Code	Choose Category
567898765433456	Comedy
<input type="button" value="Submit"/>	

This is the page for adding information of books data. There are book id which will be auto incremented, book name which need to be filled, book quantity which can be clicked and filled, book price which will start from 5000 mmk and then increment or just fill manually, book description will need to be filled, book image will be chosen from device files, author name will be chosen from database, so do for publisher name, ISBN code and category.

Search Option :

Search By Order ID

Search By Date **From :** 2024-07-04

To : 2024-07-04

Search By Status

Pending

Search Result :

No Order Found.

This is order list. Admins can search the order data with order ID, ordered date and status.

These can be searched by clicking search button.

Or admins can see all the orders by clicking show all button.

Clear button works for clearing order ID.

Search Result :

Order ID	Date	Order Total Amount	Order Tax	Order All Total	Order Total Quantity	Remark	Payment Type	Order Location	Order Phonenumber	Order Status	Customer Name	~
ORD-00001	2024-06-22	20000	1000	21000	4	567gh	MPU	lsdkjafkasdjf;las	0987655678	0	Author	Details
ORD-00002	2024-06-25	25000	1250	26250	5		MPU	asfadsfwedxzc	0987654321	0	Emilia	Details
ORD-00003	2024-06-25	10000	500	10500	1		MPU	4hdsfkj	56789098765	0	Thi	Details
ORD-00004	2024-06-27	10000	500	10500	1	asdfasdf	MPU	asdfasdfasdf	09966788990	Pending	Thi	Details

This will be shown when it is searched. Admins can click the details to check the order information.

Order Detail Report for OID: ORD-00004

Order ID	ORD-00004	Status	Pending
Order Date	2024-06-27	Report Date	2024-07-04
Customer Name	Thi	Admin Name	Thi Han

Book Name	Order Price	Order Quantity	Sub-Total
			Total Amount: 10000 MMK Tax Amount (VAT): 500 MMK Grand Total: 10500 MMK

[Print](#)

[Confirm](#)

This will be shown and admins will need to click confirm button make the order confirm.

Order Detail Report for OID: ORD-00004

Order ID	ORD-00004	Status	Pending
Order Date	2024-06-27	Report Date	2024-07-04
Customer Name	Thi	Admin Name	Thi Han

Book Name	Order Price	Order Quantity	Sub-Total
			Total Amount: 10000 MMK Tax Amount (VAT): 500 MMK Grand Total: 10500 MMK

[Print](#)

[Confirm](#)

Print

1 page

Destination: Save as PDF

Pages: All

Layout: Portrait

More settings

Sub-Total

Total Amount: 10000 MMK
Tax Amount (VAT): 500 MMK
Grand Total: 10500 MMK

[Save](#) [Cancel](#)

Admin can click print button make copy of order detail.

Make Purchase Order Here!

Purchase Info :

Purchase_ID	Purchase_Date
P-00005	2024-07-04
Admin Name	TotalAmount
Thi Han	
Tax	All_Total
BookID	Purchase Price (MMK)
-Choose BookID-	0
Purchase Quantity (Books)	
0	
Add	Clear All

This is the page for making purchasing from suppliers. Admins will need to add the necessary information and then click the add too make. Admin can click clear all too.

Note Admins will just have to enter purchase price and quantity, all the tax, total amount and all total will be calculated automatically.

Purchase Records :

Image	ID	ProductModel	PurchasePrice (MMK)	PurchaseQty (pcs)	Sub-Total (MMK)	Action
	BID-00004	Souma Tome Japanese N1 Goi	10000	20	200000	Remove

Supplier ID :

Save

After clicking add button, the purchased record will be shown, when this is shown admin will need to choose supplier name from drop down box and click save to proceed the purchasing. Or the purchased record can be removed.

Search Option :

Search By Book_ID

 Search By Date **From :** **To :**

 Search By Status

Search Result :

PurchaseOrder_ID	Date	Supplier Name	Total Amount	GrandTotal	Status	~
P-00005	2024-07-04	DawPoe	200000	210000	Pending	Details
P-00006	2024-07-04	DawPoe	200000	210000	Pending	Details

This is the purchasing list which admins can able to confirm their purchase orders by clicking details.

Purchase Order Detail Report for POID: P-00005

Purchase_ID	P-00005	Status	Pending
Purchase Date	2024-07-04	Report Date	2024-07-04
Supplier Name	DawPoe	Admin Name	Thi Han
<hr/>			
Book Name	Pur_Price	Pur_Quantity	Sub-Total
One Piece Romance Dawn Arc	5000	5	25000
Harry Potter and the Philosopher Stone	5000	1	5000
Souma Tome Japanese N1 Goi	5000	1	5000
Souma Tome Japanese N1 Goi	5000	1	5000
Harry Potter and the Philosopher Stone	5000	1	5000
Souma Tome Japanese N1 Goi	10000	20	200000
Total Amount: 200000 MMK Tax Amount (VAT): 10000 MMK Grand Total: 210000 MMK			
<input type="button" value="Confirm"/>			
Print			

The purchased recorded is shown with the related ID and all the necessary information are shown below. After this, admins can click confirm to make the purchase order confirmed.

The screenshot shows a web-based application for managing purchase orders. On the left, there's a sidebar with a tree view containing a node for 'Purchase Order Detail Report'. The main content area displays a report titled 'Purchase Order Detail Report for POID: P-00005' with the following details:

Purchase_ID	P-00005	Status	Confirmed
Purchase Date	2024-07-04	Report Date	2024-07-04
Supplier Name	DawPoe	Admin Name	Thi Han

Below this is a table of book purchases:

Book Name	Pur_Price	Pur_Quantity	Sub-Total
One Piece Romance Dawn Arc	5000	5	25000
Harry Potter and the Philosopher Stone	5000	1	5000
Souma Tome Japanese N1 Goi	5000	1	5000
Souma Tome Japanese N1 Goi	5000	1	5000
Harry Potter and the Philosopher Stone	5000	1	5000
Souma Tome Japanese N1 Goi	10000	20	200000

At the bottom of the report area, there are totals: Total Amount: 200000 MMK, Tax Amount (VAT): 10000 MMK, and Grand Total: 210000 MMK.

To the right of the report, a 'Print' dialog is open with the following settings:

- Destination: Save as PDF
- Pages: All
- Layout: Portrait
- More settings
- Sub-Total
- Total Amount: 200000 MMK
- Tax Amount (VAT): 10000 MMK
- Grand Total: 210000 MMK
- Confirm button
- Save and Cancel buttons

Admin can click print button to make slip or make copy.

Search Result :

PurchaseOrder_ID	Date	Supplier Name	Total Amount	GrandTotal	Status	~
P-00005	2024-07-04	DawPoe	200000	210000	Confirmed	Details
P-00006	2024-07-04	DawPoe	200000	210000	Pending	Details

Then the status will be confirmed.

Customer Process

Home :: Books :: Author :: ISBN :: Category :: Publisher :: Book Order

[Sign In](#) [Sign Up](#)

Welcome to our Book Store

Discover a wide range of books and enhance your reading experience.

Books

A book cover for 'One Piece Romance Dawn Arc' featuring the main characters Luffy and Usopp in a dynamic action pose on a ship.

A book cover for 'Souma Tome Japanese N1 Goi' featuring a cartoon character with large ears and a blue headband.

A book cover for 'How to find money' by Robert T. Kiyosaki, featuring a blue background with the title in white text.

A book cover for 'Harry Potter and the Philosopher Stone' featuring Harry Potter and Ron Weasley in front of Hogwarts castle.

One Piece Romance Dawn Arc
Author: Eiichiro Oda
Price: 10000
Category: Japanese Manga
Quantity: 6

[See More](#)

Souma Tome Japanese N1 Goi
Author: thi han
Price: 5000
Category: Learning
Quantity: 6

[See More](#)

How to find money
Author: poepoe
Price: 5000
Category: Learning
Quantity: 5

[See More](#)

Harry Potter and the Philosopher Stone
Author: JK Rowling
Price: 100000
Category: Fantasy
Quantity: 8

This is the home page for customers. In navigation bar there is sign and sign up buttons.

Create an account

Customer ID

CID-00004

Customer Name

Emelia Erickson

Customer Email

customer12@gmail.com

Customer Password

Customer Date of Birth

mm/dd/yyyy



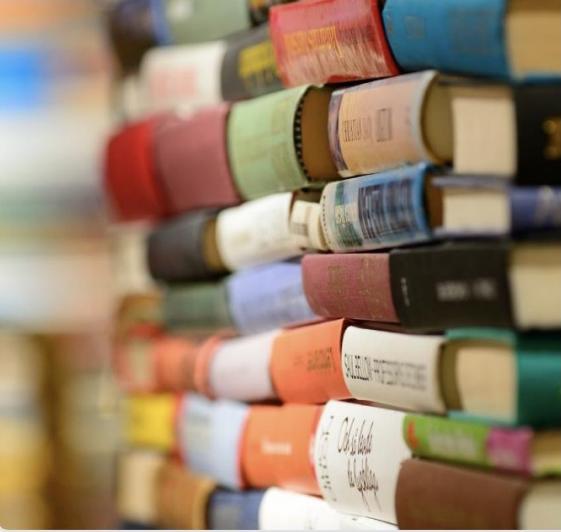
Save

Already have an account? [Login here](#)

Customer will need to fill described information. Customer id will be auto incremented.

Customer name, customer email and customer password will need to be filled. The password has some policies for strong password validations. Customer will need to click the icon for choosing date of birth. After filling all information click save button for registration. If the customer already have an account, login here can be clicked.

Home :: Books :: Author :: ISBN :: Category :: Publisher :: Book Order



Customer Login

Customer Email

Customer Password

Login

Don't have an account? [Sign up here](#)

[**GO BACK?**](#)

Customer will have to enter the email and password for login. If customer do not want to login he can click go back button to reach home page. Or clicking sign up here for new registration. Note, customer password must not be false three times.

Still Count Down Ten Minutes

You will be redirected back to the Login Page after ten minutes **584** seconds

This is the timer page when the customer enters wrong password three time same as admin.

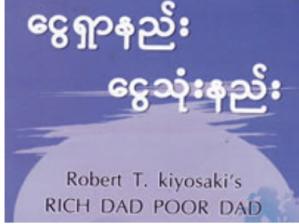
Home :: Books :: Author :: ISBN :: Category :: Publisher :: Book Order

Search Books by Author

Enter Author:

Search

Search Results



Robert T. Kiyosaki's
RICH DAD POOR DAD

How to find money
The ways to find money

Author: poepoe
Publisher: Serene Scribe

Customers can search books by author name.

Enter the author name and click the search button, the related book will be shown below.

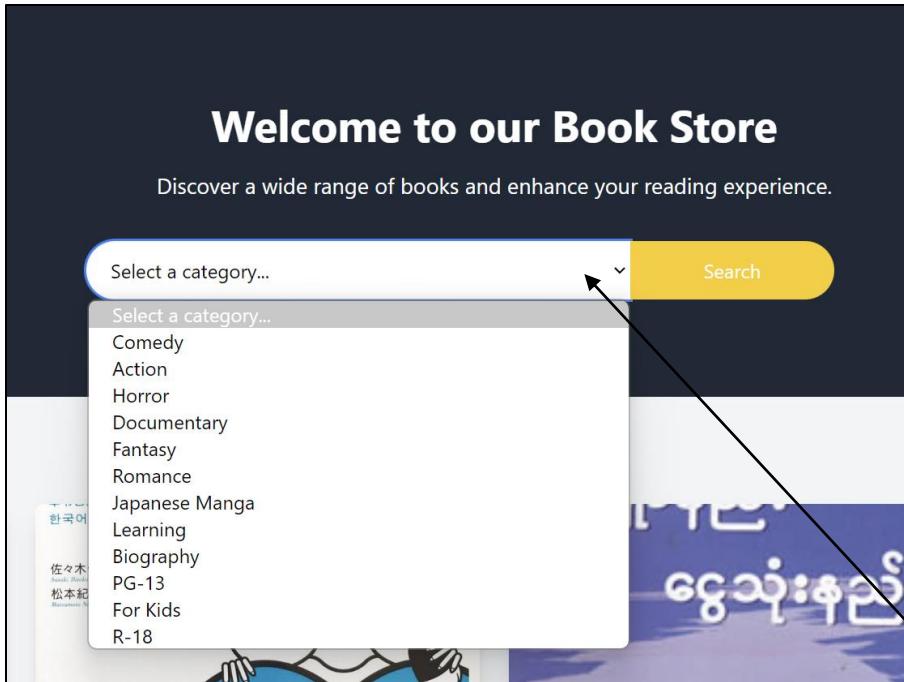
Home :: Books :: Author :: ISBN :: Category :: Publisher :: Book Order

Search Books by ISBN

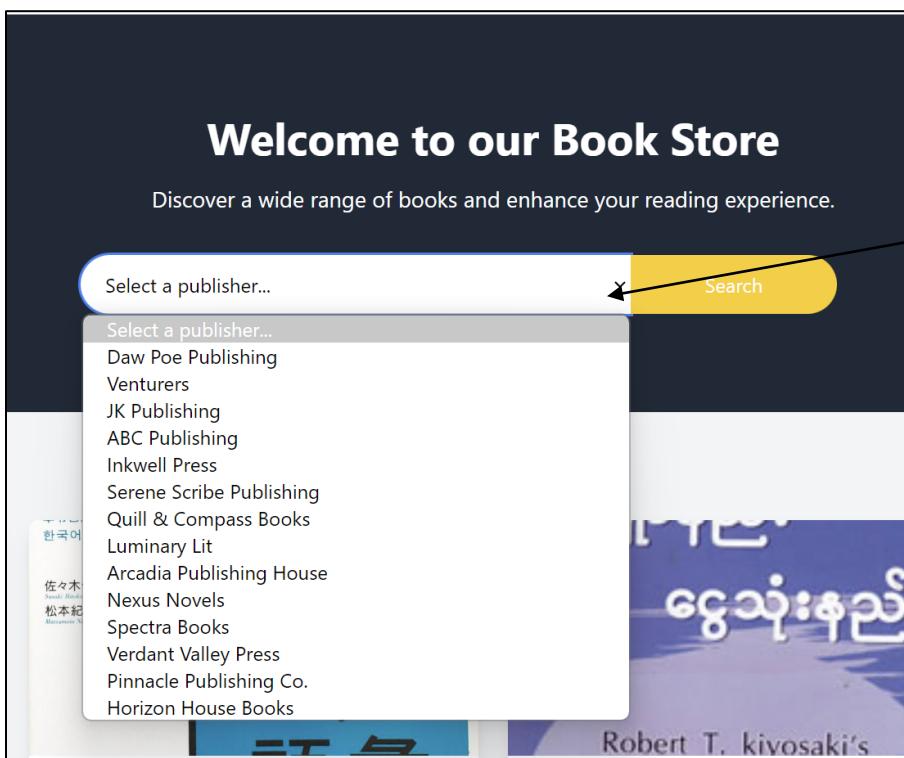
Enter ISBN:

Search

ISBN can also be search too. And this page has same function like author page.



These are category and publisher pages. The information are group and can be search with drop down boxes.



Click the down arrow button or the search box, the drop-down button will be shown.

Here is Your Shopping Bag:

Image	BookID	BookName	Price	BuyQty	SubTotal	Action
	BID-00009	Minna no nihongo N5	\$5000	2	\$10000	Remove

Sub-Total: \$10000
TAX (5%): \$500
Grand Total: \$10500

[Clear Cart](#) | [Continue Shopping](#) | [Make Payment](#)

This page will be reached if book order tag is clicked. If the customer did not login, the system will ask customer to login first.

Book ordering process



Minna no nihongo N5

Author: JK Rowling

Price: 5000

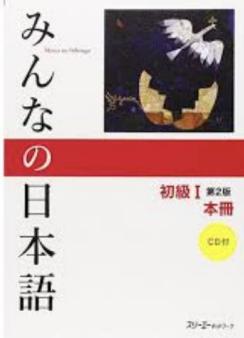
Category: Learning

Quantity: 30

See More

Click see more button for ordering process

Book Details: Minna no nihongo N5



Book Name: Minna no nihongo N5
 Author Name: JK Rowling
 Publisher Name: JK Publishing
 ISBN: 9780553380958
 Category: Learning
 Each Price: 5000
 Stock Quantity: 30
 Buy Quantity:

Add to Cart

Choose quantity

After choosing quantity, click add to cart button.

Here is Your Shopping Bag:

Image	BookID	BookName	Price	BuyQty	SubTotal	Action
	BID-00009	Minna no nihongo N5	\$5000	4	\$20000	Remove

Sub-Total: \$20000
 TAX (5%): \$1000
 Grand Total: \$21000

[Clear Cart](#) | [Continue Shopping](#) | [Make Payment](#)

This is the shopping cart page. All the amount including taxes are shown. Customer can proceed to make payment, continue shopping or clear cart. Customer can also remove by each book.

Customer Personal Data

Customer Phone Number

Customer Address

Customer Email

Here customer will need to add phone number and address, customer email will be used from the account and described.

Order Information

Order Number
ORD-00005

Order Date
2024-07-04

Order Total Amount
20000 MMK

VAT (5%)
1000 MMK

Grand Total
21000 MMK

Total Quantity
4 Pcs

Remark
ajk;sldfjasl;dfla

Here is the order information to check back, can add remark.

Payment Section

Payment Type
 MPU VISA Cash on Delivery

Name (as it appears on your card)
Ex. Mg Mg

Card Number (no dashes or spaces)
1234567

Expiration Date
Month Year

Security Code (3 on Back, Amex 4 on front)
Ex. 123

Payment Section

Payment Type

MPU VISA Cash on Delivery

Can choose payment types MPU, Visa or cash on delivery. If cash on delivery is chosen no information will be needed to fill. If MPU or Visa is chosen, the detailed information will be need to filled.

Order Delivery Details

Delivery Type

Other's Address Same Address

Delivery Phone

Enter delivery phone number

Delivery Address

Enter delivery address

If order delivery is changed, the customer will need to fill information. If not, same address must be chosen.

Orders Summary

Image	Product ID	Product Name	Price	Buy Qty	SubTotal	Action
	BID-00009	Minna no nihongo N5	5000	4	20000	Remove
					Sub-Total: 20000	VAT (5%): 1000
					Grand Total: 21000	

[Confirm Order](#)

[Continue Shopping](#)

This will be order summary to check again before confirming order. If customer wants to confirm, confirm order will be clicked. If customer wants to continue shopping, continue shopping button will be clicked.

Summary for User Manual

This is all for user manual of the system. Store staffs including admins will need to read these manuals before using the system. Even though they will have training sessions; these user manuals can help them even if they forget something in the future. There is also user manual for customers. They can share this user manual to customers too. For example, sharing the user manual books when they launch their program. Store staffs will also be able to read user manual and can guide customers about the usage of book too. For example, whenever a customer contacts to the store for the service, they can read this user manual and able to guide to that customer.

Chapter – 7

Conclusion

Chapter 7 Evaluation

7.1 Evaluation Against Aims & Objectives

7.1.1 Aims

The system included most features of e-commerce system website. It also provides automated features for admins. The system also provides smooth and convenient features for customers too. So, the system full fills the primary aims.

7.1.2 Objectives

Analysis

After gathering requirements, getting knowledge for making analysis in correct method is started. Before starting analysis, methodologies were studied and read documentation about analysis. Then current business scope and issues are analyzed which include SWOT analysis. When new system is decided, similar systems are research and compared. Their functionalities and non-functionalities are also compared and the systems (for both function and non-functional) that got best scores are referenced. These documentations can be read in Chapter 1 which contains about analysis and in Chapter 2 which contains about similar product comparisons.

Feasibility Study

For the feasibility study, strength and weakness of methodologies are listed and compared. Then used the suitable methodology for the current project. This process same goes for technical feasibility too which may include choosing programming language and database. After DSDM methodology is recommended and chosen for this current project, feasibilities for DSDM is also described in this documentation for why it is used. After this, possible legal social ethical professional issues are studied and used for this project. These documentations can be read in Chapter 3.

Foundation

For the foundation objective, target users are defined. Then functional requirements are also defined. These functional requirements are prioritized by MOSCOW prioritization which is referenced and applied for developing program. Non-functional requirements are described that may needed for the program. After defining these, time boxes are planed followed by risk management, risk monitoring and risk avoidance. Then possible risks are identified and after this risk matrix is described. These foundations are described in Chapter 4.

Design

Design for use cases and class diagram are developed within deadline. But there was not enough time for prototyping so time box 1 had only low-level prototyping and customer sided time box's prototypes are iterated a lot until before the deployment.

Coding

Coding is a little difficult and had to take time from other plans such as testing. But some parts are performed in parallel. But the system was able to follow some parts of Nelson heuristic usability

Testing

Testing only done for the most necessary part of the system to catch up with the deadlines of the project plan. But all the essential functions and requirements have been tested and even iterated if necessary.

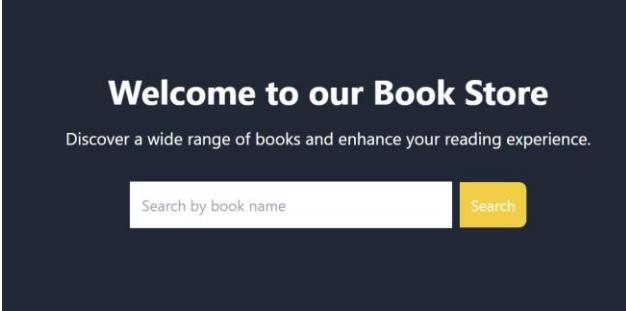
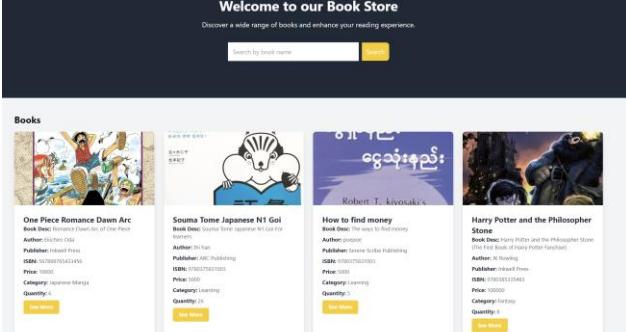
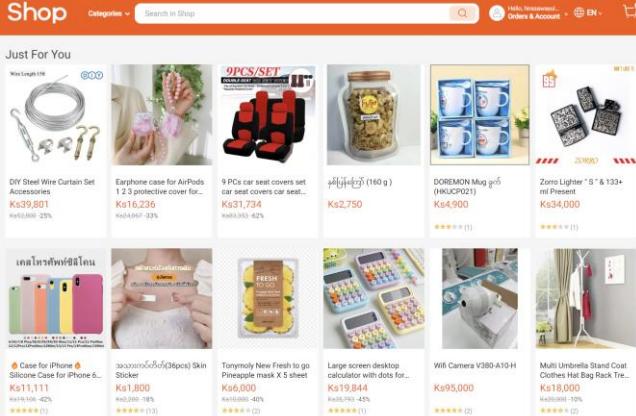
Implementation

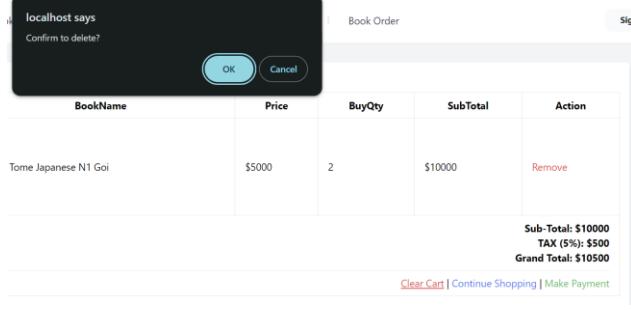
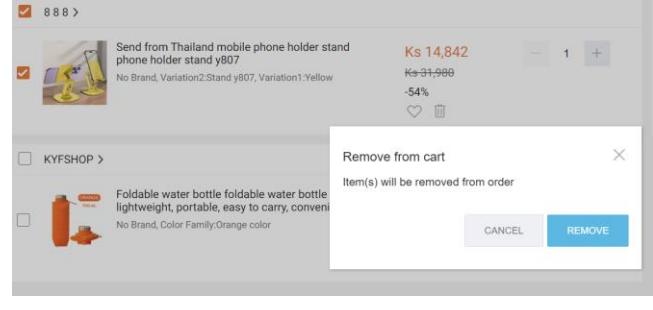
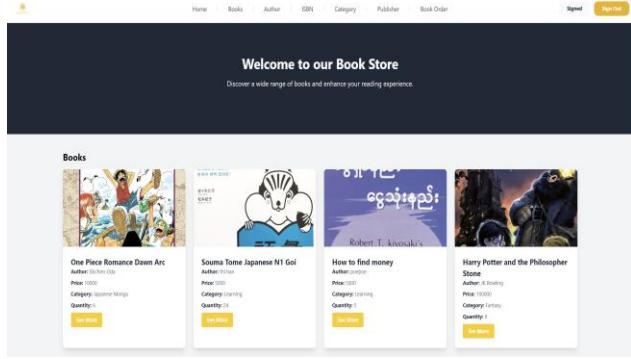
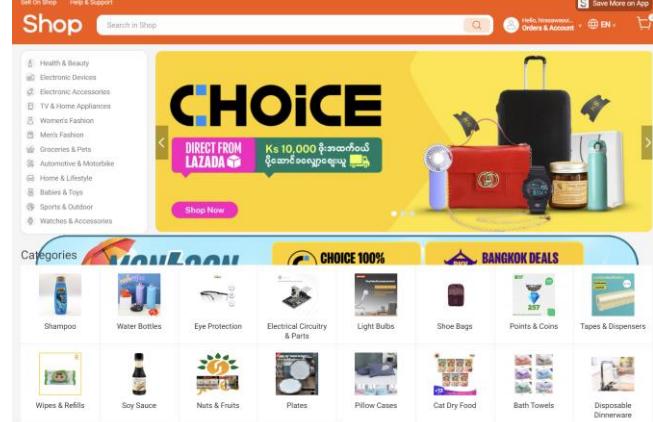
All the implementation plans, required steps are described in chapter 6 which includes deployment diagram, explanations and data migration. User manual which will be needed before deployment is also explained in the same chapter.

Training

Before the deployment of the program, admin side users had to read user manual and training sessions for them are made. It had to make sure that they understand the flow of the program and have security and other technical knowledge. After the training camps are over, they had to use the program in beta version too.

7.2 Evaluation Against Similar System

No.	Current System	Similar System (Shop.com.mm)
1.	<h3>Shopping Cart Reference</h3> <p>Here is Your Shopping Bag:</p>  <p>Mathematic calculation function is included and continue shopping, deleting and make payment are not designed with icons but with letters to make customers easier to understand.</p>	<h3>Shopping Cart Reference</h3>  <p>Has mathematic calculations to provide user experience. Most of the linking and functions are provided with buttons.</p>
2.	<h3>Searching items</h3>  <p>Search bar is referenced but this is not applied in the navigation bar. Search button is on the side. This is due to different system and business intentions.</p>	<h3>Searching items</h3>  <p>Has search bar in navigation bar to search all the products they provide. Search icon is in the search bar.</p>
3.	<h3>Display products in cards</h3>  <p>Books are displayed with cards. Each card is huge to read specific information. Also, each card has links to detailed page.</p>	<h3>Display products in cards</h3> 

		Products are displayed in small size card since they provide a lot. Each card links to their detailed information provided page.
4.	<p>Error prevention</p>  <p>Ask the user permission first before deleting something.</p>	<p>Error prevention</p>  <p>It pops up with message box in the middle.</p>
5.	<p>Home page visual</p>  <p>Has clear and minimalist design in the home page. Navigation bar is on the top providing only necessary information for a book. Use few main colors which are white, black and yellow.</p>	<p>Home page visual</p>  <p>Has many items provided in home page. Navigation is on the side since it has many different products. Has main color orange and its related colors.</p>

7.3 Evaluation Against Justification Made

Methodology

In this project, Waterfall methodology and DSDM methodology are compared. From the comparison results, DSDM was chosen since it is flexible and effective not only for developers but also for admins. Since admins will change the website depending on the customers' taste and business requirements which also vary depending on business strategies. DSDM uses timeboxing method making the project having two time-boxes. There were also iterations in each time-boxes. Issues and problems were also occurred in the development phases of each time-boxes and had some delays. But after all the development and testing are done, the final product caught the client's satisfaction. Since the project is based on the DSDM method, whenever the client wishes to change design or system flow, the product can be able to change along with it. Documentations are also reported based on DSDM methodology, common issue that occurs in Agile development is already solved. In addition, using this methodology gain the knowledge of time boxing, and some other benefits.

Language

For the programming language, Java and PHP are compared and it is found that PHP is suitable for the current project. Although Java is strong and widely used in web development, for the medium sized system like current project is better with PHP. Also, PHP is already familiar and easier when written with frontend languages like JavaScript, HTML and Tailwind CSS. It was also compactable when using with MySQL. Using pure PHP had some issues while processing data without reloading and better when the developer have more knowledge about scripting language and its syntax, symmetric and pragmatic. For the frontend languages, JavaScript is mainly used and for the designing only Tailwind CSS is used. JavaScript is strong and widely used in web development with many other languages. In this project, it was used to create functions for the purpose of frontend user experience. Its framework and libraries were strong too but they were not used in the project. To reduce CSS codes, tailwind is compactable and becoming people favorite framework. It was used in this project for making of beautiful and responsive UI design. In addition, using all these languages in PHP file format was easier to manage files and better while linking and reusing of the files.

Database

MySQL and mongoDB were compared which one is more suitable for this current project. Although mongoDB is becoming popular and stronger, MySQL is more suitable for this

project. MySQL is an open-source database which is cost-effective for the store and it is familiar with most the developers. Although frontend of the system may change frequently, the backend which is database of the system may not change very much. MySQL is better suitable choice when the database architecture is stable. Even though other web-based systems may change their backend system, the requirement and business flow for this system will not change. The use of MySQL is also easy and can able to create databases, and their tables manually and by the use of executing SQL queries. Also, PHP is integrated with MySQL, it is easy to write SQL codes with PHP and easier to connect with the website. The usage of inserting, updating and deleting data are also simple. Not only that but also fetching and joining tables are also easy to understand. Since MySQL is familiar to many developers, even if the developer team is changed, other developers can easily understand how the database is architecture. But there are also issues and errors while using MySQL. The current project used Xampp application to use MySQL database, the shutting down is the huge problem. If the database is not exported, all the tables will be destroyed and will need to restart. Rebuilding process may be easy after the architecture is designed but it will take unnecessary time and slow down the progress of the development. In this project, there are select queries to view the data, and tables are joined to view and fetching of the data, creating table queries, deleting unwanted data and also other useful queries are also included for better consistency of the website.

Design

Designing in the project was a little difficult since it includes a lot of software development knowledge from real life projects. Design in the project includes designing of prototypes, designing of diagrams, and designing of system interfaces. Detail designing was really important and at the same time needs lot of research, analysis, planning and time. So, it was difficult but after the designs are finished the sequence process are easier a lot. By following the designs, the development can be done in short time seamlessly. Design in this current includes use case diagram, class diagram, prototypes, deployment diagrams and user manuals. Even though user manual may not be designing for the project development, designing user manual clearly can help when owners or clients read the book by good visuals, and explanations. Designs purposes were to reduce time and have better understanding for the user and all designs in the project are suited with that fact.

7.4 Evaluation Against Timebox Plan

Timebox 1: Manage Purchases Time Box

Time box 1 was developed on April 30, 2024 Tuesday and planned to end on May 20, 2024 Monday. Developing time box 1 was more trouble than the prediction which may due to coding skill and technical knowledge. But all the tasks were able to finish within deadlines. All the development steps were able to finish in time may due to the well planning of time box and following steps from it. As a conclusion, all the design, coding, documentation, testing was able to finish within planned date May 20, 2024 even though there are some errors and iterations.

Timebox 2: Manage Order Time Box

Time box 2 was developed on May 21, 2024 Tuesday and planned to end on June 10, 2024 Monday. After developing time box 1, developing time box 2 is easier than expected. Although there are new functions, and new things to learn in time box 2. Even though design iteration was repeated but it was not big in changes to be documented. As a result, time box 2 also able to finish within deadlines which is June 10, 2024. Like time box 1, time box 2 overall design, coding, documentation, and testing are also done without much problems than planned.

7.5 Personal Evaluation

Personal Skills

After doing this project, opinion on making a project in real life got wider. Learning new knowledge while continuing the project also taught many experiences. Moreover, skills like ability to work under deadlines, stresses, and pressures got improved. Documentation skills were also improved due to learning from many different sources.

Analysis

Doing this project helps me improve my analytic skills. Knew how to make analysis in diplomatic way and improve demonstrating skill to demonstrate the data that got from analysis. Also, realized comparisons and including clarifying of strength and weakness is important before confirming or deciding to choose something. Moreover, learnt more detailed factors about Agile and DSDM and hoping these methodology knowledges may help in the future. Furthermore, want to learn about more methodologies and want to make analysis in my future projects like SCRUM, XP, SSADM.

Technology and Coding

This project helped me improved my technical skills a lot. Improved my skills about using framework skill and realized using frameworks help projects faster and easier than using only pure technologies. During the project, learned about using tailwind CSS and applied and realized using tailwind is easier and faster than pure CSS which is hard to make responsive and need more codes for better design. Also, skills about PHP and JavaScript are improved a lot. Used more complex and difficult functions for better performance of a website than casual coding. File management also improve a little.

Design

Not only design the website but also design about project development got improved a lot. Designing prototypes, ERDs, Class diagram and sequence diagrams improved knowledge about design. Also designing in this project improved UI/UX knowledge since learnt a lot and made analysis.

Report

This project made me realized the importance of documentation in software development projects. Properly documenting project proposal and project report could recall the

processes easily and increase the effectiveness of system even in many other fields like business and medicine.

7.6 Strength and Weakness of Tempest Books

7.6.1 Strength of Tempest Books

For admins

- They will able to use this website can manipulate purchasing, book information and their related information which are author, publisher, ISBN and category.
- They will able to know the ordering information from customer and can be able to give confirmation of order. But they will not be able to manipulate the data like purchasing.
- The system will let admin easily manipulate the admin side data and easily review past records.
- The system has auto calculated functions to save more time and reduce human errors.

For customers

- The system includes searching and listing functions which will save time for customers.
- Customers will able to manipulate the ordered data in the cart before making payment.
- The system has auto calculated functions to show the quantity and charges including tax fees.
- Customers will have only few inputs which can reduce errors and improve the experience.

7.6.2 Weakness of Tempest Books

- The current lack of encryptions and weak security.
- The current UI may not be favored by the customers.
- The current UX is not smooth enough to penetrate into the enterprise level market.
- The system excludes weekly and month sales and reports.

7.7 Future Amendment

7.7.1 Program

In the future, the program will be more consistent and emphasize on security and functions for both customer and admin. There will be more functions and smoothness of website will be better. In addition, customer side website will be look better visually. Customers will be able explore the website and can be able to save or read brief introductions of books in the future. Customers will able to use the website without creating and by login using their Google and social media accounts. For the admin side, system will also improve by having more function like exporting data in excel, listing for selling status and role-based systems. The

system will also have encryptions for both customer and admin, and some data will be encrypted.

7.7.2 Design

The design changing of the website will frequently occur in future since the system depends on trends and user experiences. For example, the hover, active of website will slightly different by each iteration. Also, the visual of website can change according to owners and business requirements.

7.7.3 Report

When adding new functions and features to the system, the documentation will have more new slides, iterations and test scripts. At that time, the documentation will be updated and since this report is based on DSDM method, the report will easily be documented. Unlike the other Agile based developments, this report will be easier and cleaner to read.

Appendix

Section A: Use Case Descriptions

Timebox 1: Purchasing Timebox

Use Case Description

Use Case Name	View Orders
Actor	Admin
Flow of Event	Admin can able to view orders made by customers and making confirmation of orders.

Use Case Description

Use Case Name	Purchase Books
Actor	Admin
Flow of Event	Admin can able to buy books from suppliers and show these books on website.

Use Case Description

Use Case Name	Add Books
Actor	Admin
Flow of Event	Admin can able to add the books after purchasing from supplier. Admin can add book which include detail information like author name.

Use Case Description

Use Case Name	Update Books
Actor	Admin

Flow of Event	Admin can able to update the book information when it is needed. For example, updating price.
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Use Case Description

Use Case Name	Delete Books
Actor	Admin
Flow of Event	Admin can able to delete the book when the book is not sold anymore.

Use Case Description

Use Case Name	Create Accounts
Actor	Supplier
Flow of Event	Supplier can able to create account for supplying books.

Timebox 2: Ordering Timebox

Use Case Description

Use Case Name	Create Accounts
Actor	Customer
Flow of Event	Customer can able to create account for ordering books.

Use Case Description

Use Case Name	Order Books
Actor	Customer
Flow of Event	Customer can able to order books on website.

Use Case Description

Use Case Name	View Orders
Actor	Customer
Flow of Event	Customer can able to view orders that are been made.

Section B: Detailed Class Definitions

Timebox 1: Purchasing Timebox

Class Name	Admin
Attributes	AdminID, adminName, adminPassword, adminEmail, adminPhonenumber
Operation	Create ()
Description	<< The Admin class is used to manage purchase and order of books and add information of book and its detailed information on the website.>>

Class Name	Book
Attributes	BookID, bookName, bookQty, bookPrice, bookDesc, bookImg, authorID, categoryID, ISBN_id, publisherID
Operation	Create (), Update (), Search (), Delete ()
Description	<< The Book class is used to add books on the website by admin.>>

Class Name	Purchase
Attributes	PurchaseID, purchaseDate, purchaseAmount, purchaseTax, purchaseTotalAmount, supplierID, purchaseStatus, adminID

Operation	Create (), Update (), Search (), Delete ()
Description	<< The Purchase class is used to purchase books from the suppliers by admins.>>

Class Name	Purchasedetail
Attributes	PurchaseID, BookID, unitPrice, Qty
Operation	Create (), Update (), Search (), Delete ()
Description	<< The Purchasedetail class is used to check or edit detailed information of purchased data.>>

Class Name	Supplier
Attributes	SupplierID, supplierName, supplierEmail, supplierPassword
Operation	Create ()
Description	<< The Supplier class is used to contact with admins letting them purchase book.>>

Class Name	Category
Attributes	CategoryID, category
Operation	Create (), Update (), Search (), Delete ()
Description	<< The Category class is used to add specific category for books.>>

Class Name	Author
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Attributes	AuthorID, AuthorName, AuthorBio
Operation	Create (), Update (), Search (), Delete ()
Description	<< The Author class is used to add author that wrote the books >>

Class Name	ISBN
Attributes	ISBN_ID, ISBN_code
Operation	Create (), Update (), Search (), Delete ()
Description	<< The ISBN class is used to add ISBN code of the books >>

Class Name	Publisher
Attributes	PublisherID, PublisherName, PublisherBio
Operation	Create (), Update (), Search (), Delete ()
Description	<< The Publisher class is used to add publisher that published the books.>>

Timebox 2: Ordering Timebox

Class Name	Customer
Attributes	CustomerID, customerName, customerEmail, customerPassword, customerDoB
Operation	Create (),
Description	<< The Customer class is used to let customers make orders or search books on the website.>>

Class Name	Order
Attributes	OrderID, orderDate, orderTotalAmount, orderTax, orderAllTotal, orderTotalQuantity, remark, paymentType, orderLocation, orderPhone, orderStatus, customerID
Operation	Create (), Update (), Search (), Delete ()
Description	<< The Order class is used to let customers make orders on the website.>>

Class Name	Orderdetail
Attributes	OrderID, bookID, productPrice, BuyQty
Operation	Create (), Update (), Search (), Delete ()
Description	<< The Orderdetail class is used to let customers check or edit detailed orders on the website.>>

Class Name	Category
Attributes	CategoryID, category
Operation	Search ()
Description	<< The Category class is used to find with specific category of books.>>

Class Name	Author
Attributes	AuthorID, AuthorName, AuthorBio
Operation	Search ()
Description	<< The Author class is used to search with author name that wrote the books.>>

Class Name	ISBN
Attributes	ISBN_ID, ISBN_code
Operation	Search ()
Description	<< The ISBN class is used to find with specific ISBN code of the books.>>

Class Name	Publisher
Attributes	PublisherID, PublisherName, PublisherBio
Operation	Search (),
Description	<< The Publisher class is used to search with publisher of the books.>>

Class Name	Book
Attributes	BookID, bookName, bookQty, bookPrice, bookDesc, bookImg, authorID, categoryID, ISBN_id, publisherID
Operation	Create (), Update (), Search (), Delete ()
Description	<< The Book class is used to let customers buy books on the website.>>

Section C: Coding

Form	Function	Purpose
Every page from admin except login and logout. Order, orderdetail from customer	Confirmlog()	To show confirm message of the transaction for the user.
Shopping Cart Functions	AddProduct()	To add the products repeatedly while saving data.
Shopping Cart Functions	RemoveProduct()	To remove the products from the cart.

Orderdetail list, purchasedetail list	PrintPage()	To print the report data.
Order form and purchase form	CalculateTotalQuantity()	To calculate the total quantity of products from cart.
Order form and purchase form	CalculateTotalAmount()	To calculate the total amount of products from cart.

Section D: Test Scripts

Timebox 1: Purchasing Timebox

Unit Test 1		Test Case: admin sign up form	Designed by: Thi Han Naing	
Data Source: Admin Table		Objective: To test the data entry in Admins registration form	Tester: Thi Han Naing	
Test Case	Description	Test Procedure	Expected Result	Actual Results
1.2	Test admin password can be seen or not.	'Eye' button is clicked, admin password can be seen or not	Passwords can be seen	See Fig.1.3 & 1.4

Before



Create an account

Admin ID

Admin Name

Admin Email

Admin Password
 

Whenever this is clicked,
the password won't show
up.

Admin Phone Number

Sign Up

Already have an account? [Login here](#)

Fig 1.3

After



Create an account

Admin ID

Admin Name

Admin Email

Admin Password
 

When this is clicked, the password is shown up. This helps user remember the password before sign up.

Admin Phone Number

Sign Up

Already have an account? [Login here](#)

Fig 1.4

Unit Test 1		Test Case: admin sign up and registration form	Designed by: Thi Han Naing	
Data Source: Admin Table		Objective: To test the data entry in Admins registration form	Tester: Thi Han Naing	
Test Case	Description	Test Procedure	Expected Result	Actual Results
1.3	Test admin password can be seen or not.	Weak password is entered, ask for stronger password	Password length must be including upper,	See Fig.1.5 & 1.6

			lower, special characters and numbers	
--	--	--	---	--

Before



Create an account

Admin ID

Admin Name

Admin Email

Admin Password

Admin Phone Number

Sign Up

Already have an account? [Login here](#)



Fig 1. 5

After



The Tempest Books logo features a stylized yellow tree with many branches and leaves, set against a dark background. Below the tree, the words "Tempest Books" are written in a small, sans-serif font.

Create an account

Admin ID

Admin Name

Admin Email

Admin Password

Admin Phone Number

Sign Up

Already have an account? [Login here](#)

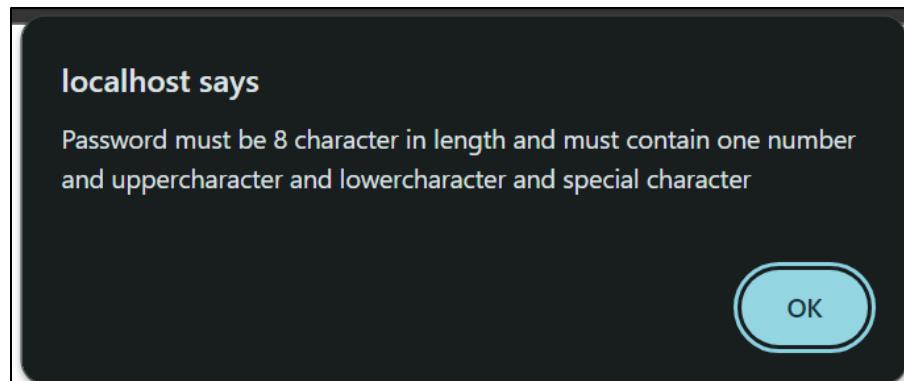


Fig 1.6

Unit Test 1		Test Case: admin sign up and registration form	Designed by: Thi Han Naing	
Data Source: Admin Table		Objective: To test the data entry in Admins registration form	Tester: Thi Han Naing	
Test Case	Description	Test Procedure	Expected Result	Actual Results
1.4	Testing '@' is needed or not in email.	'Sign Up' button is clicked, '@, .com' sign is missing in email input field.	Show message	See Fig.1.7 & 1.8

Before



Create an account

Admin ID

Admin Name

Admin Email

Admin Password

 ⓘ

Admin Phone Number

Sign Up

Already have an account? [Login here](#)

Fig 1.7

After



Create an account

Admin ID
AID-00005

Admin Name
mike

Admin Email
mike12

! Please include an '@' in the email address. 'mike12' is missing an '@'.

Admin Phone Number
123123123

Sign Up

Already have an account? [Login here](#)

Fig 1.8

Module 2: Adding information form

Unit Test 2		Test Case: Add book information form	Designed by: Thi Han Naing	
Data Source: Book Table		Objective: To test the data entry in Add Book information form	Tester: Thi Han Naing	
Test Case	Description	Test Procedure	Expected Result	Actual Results

2.2	Testing drop downs can work or not	When drop down button is clicked, related data will be shown up	Showing data from database	See Fig.2.3 & 2.4
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Before

Add Book Information

Book ID	Book Name
BID-00010	Book Name
Book Quantity	Book Price
Enter Book Quantity (1 to 50)	Enter Book Price (5000 to 10,000,000)
Book Description	Book Image
Book Description	<input type="button" value="Choose File"/> No file chosen
Choose Author Name	Choose Publisher Name
<input type="text"/>	<input type="text" value="Daw Poe Publishing"/>
Choose ISBN Code	Choose Category
567898765433456	Comedy
<input type="button" value="Submit"/>	

Fig 2.3

After

Add Book Information

Book ID	Book Name		
BID-00010	Book Name		
Book Quantity	Book Price		
Enter Book Quantity (1 to 50)	Enter Book Price (5000 to 10,000,000)		
Book Description	Book Image		
Book Description	<input type="button" value="Choose File"/> No file chosen		
Choose Author Name	Choose Publisher Name		
<input type="text" value="poepoe"/>	<input type="text" value="Daw Poe Publishing"/>		
<input type="text" value="poepoe"/> <div style="background-color: #007bff; color: white; padding: 2px 5px; margin-left: 10px;">poepoe</div> <div style="background-color: #f8f9fa; border: 1px solid #ccc; padding: 5px; margin-left: 10px;"> thi han JK Rowling J.R.R.Tolkien Eiichiro Oda George R. R. Martin Lwin Min Thant </div>	Choose Category	<input type="button" value="Submit"/>	
Choose Category			
<input type="button" value="Submit"/>			

Fig 2.4

Unit Test 2		Test Case: Add book information form	Designed by: Thi Han Naing	
Data Source: Book Table		Objective: To test the data entry in Add Book information form	Tester: Thi Han Naing	
Test Case	Description	Test Procedure	Expected Result	Actual Results
2.3	Testing image can be selected or not	When 'choose file' clicked, image can be able to choose	Showing images from file	See Fig.2.5 & 2.6

Before

Add Book Information

Book ID BID-00010	Book Name Book Name
Book Quantity Enter Book Quantity (1 to 50)	Book Price Enter Book Price (5000 to 10,000,000)
Book Description Book Description	Book Image Choose File No file chosen
Choose Author Name poepoe	Choose Publisher Name Daw Poe Publishing
Choose ISBN Code 567898765433456	Choose Category Comedy
<input type="button" value="Submit"/>	

Fig 2.5

After

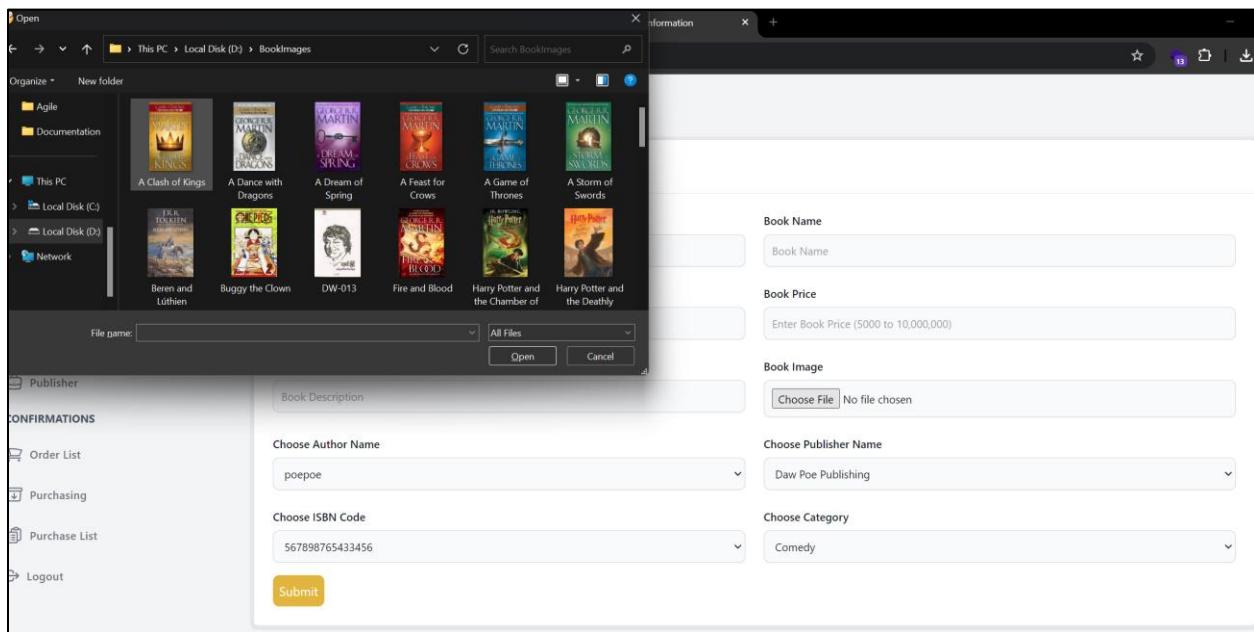


Fig 2.6

Section E: Interview Scripts

No	Interviewee	Meeting Date	Scripts	Gathered Information
1.	Founder		Meeting with founder of Tempest Books to understand operations of the shop	Admin process information
2.	Co-founder		Meeting with co-founder to understand managing processes of the shop	Purchase process and delivery information
3.	Staffs		Meeting with staffs to understand about books	Books and related information

4.	Customers	Interviewing them to give review about store	Design and theme and customer support
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