A Project Report

on

Bookrack

Submitted in partial fulfillment of the requirement of

Project-VIII (BIT479CO)

Of

Bachelors of Information Technology

Submitted To

Purbanchal University

Biratnagar, Nepal

Submitted By

Bishal Tamang (380671)

Rupak Dangi (380678)

Shristi Pradhan (380684)

Kantipur City College

Putalisadak, Kathmandu

31st Aug, 2024

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Project Supervisor

Mr. Rubim Shrestha

Kantipur City College

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Topic Approval Sheet

It is hereby informed that the topic selected by Bishal Tamang (380671), Rupak Dangi (380678) and Shristi Pradhan (380684) of Bachelors of Information Technology, VIII-semester for their semester project (BIT479CO) has been found suitable as per the credit assigned by Purbanchal University (PU), Biratnagar, Nepal.

The project Committee has approved the following topic and supervisor for the above-mentioned students,

Topic Approval: Bookrack

-----------------------------   -----------------------------

Mr. Saroj Pandey   Mr. Rubim Shrestha

HOD, Department of IT   Project Supervisor

Certificate from Supervisor

This is to certify that the project entitled "Bookrack" submitted by Bishal Tamang (380671), Rupak Dangi (380678) and Shristi Pradhan (380684) to the Department of Information Technology, Kantipur City College, Kathmandu, Nepal towards the requirement for BIT: Project-VIII, is an original work carried out by them under my supervision and guidance.

Mr. Rubim Shrestha

Department of IT

Project Supervisor

Acknowledgement

The project members express the deepest appreciation to all those who supported the completion of the project on "Bookrack".

In the foremost place, the project members would like to give special gratitude to our principal, Mr. Raju Kattel, Deputy Head of Department, Mr. Saroj Pandey, project supervisor Mr. Rubim Shrestha, who gave his valuable time for guidance and supervision and helped during the complications in preparing this project. And the project members want to express their gratitude for his valuable time from the bottom of their heart.

Apart from this, the project members also want to thank the fellow colleagues who helped in the project. During the development, the project members had ups and downs but didn't lose hope in the project and worked together as a team.

Bishal Tamang (380671)

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Abstract

"Bookrack" is a web application designed to sell second-hand books. This application users are categorized as "providers" and the "readers". The providers are those who sell the books and the "readers" are those who buy the books. The books provided by the "providers" are bought by the store and provide those books to the "readers".

The users need to register their account. After registration, the "providers" can add new books. The new books added by the providers are listed with descriptions. "Readers" can purchase the books, add to the wishlist, and add to cart after the registration. The "readers" after adding to the cart can checkout by choosing the click and collect option. "Readers" can track their purchased books.

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1. Introduction

1.1. Overview

"Bookrack" is a book commerce Portal to buy and sell second hand or old books from the physical store or can have home delivered. "Bookrack" users are called "providers" and "readers". The book is bought from the "providers"and provides them to the "readers". The readers can rent the book from the physical location or can have it delivered.

1.2. Problem Statement

Many people find it challenging to buy new books every time due to budget constraints, especially when the costs of new editions are high. As a result, using older books, which, while valuable, tend to wear out overtime.The condition of these books deteriorates due to frequent use, poor storage, or simply the passage of time. This can lead to valuable knowledge and resources being lost, which is not only a waste of the books themselves but also an inefficient use of resources.Therefore, a sustainable approach to book ownership, such as reusing and reselling pre-owned books, is essential to reduce waste and make knowledge more accessible and affordable to all.

1.3. Objectives

The objectives of this project are as follows:

- To eradicate the need of buying new books every time.

1.4. Features

The features included in this project are as follows:

- User accounts and profiles
- Book Listings and Descriptions
- Wishlist
- Shopping Cart and Checkout
- Order Tracking

1.5. Significance

The significance of this project are as follows:

- Readers can purchase the book anytime.
- Sellers can expand their global reach.
- Inventory Management.

1.6. Scope and Limitation

As it is known that, everything in their aspect has its own pros and its cons, this program too has its own which the project members tried to eliminate as much as possible. The below mentioned are the limitations of the program.

- Customers cannot physically examine books before purchase.
- Website downtime or glitches can disrupt the customer experience.
- Processing returns and refunds.

1.7. Organization of the Document

Chapter 1 includes the basic details like an introduction, problem statement, objectives, significance, feature, assignment of roles and responsibilities and document organization. Chapter 2 includes the details of the existing systems like pros and cons. Chapter 3 includes the methodology like system development model, assignment of roles and responsibilities and tools used. Chapter 4 includes the system analysis like requirement analysis, requirement gathering, functional requirements, non-functional requirements, feasibility study. Chapter 5 includes the system design like system architecture, class diagram, use case diagram, sequence diagram and more diagrams are in this chapter. Chapter 6 includes development and implementation like Programming platform, Operating Environment. Chapter 6 includes Testing and debugging like testing tools and test cases. Chapter 7 includes the conclusion and Chapter 8 includes references.

2. Literature Review

2.1. KitabKinBech

KitabKinBech is an online platform to buy and sell second hand books. It also offers to buy and sell Handwritten as well as online notes. [1]

Pros

- Different varieties of books available (PEA'S, +2)

- Has different social handles

- Discounts offered

- Guess or guide paper also available

Cons

- No book description

- No wishlist

- No sorting based on price and genre/category

- Very bright colors used which made difficult for eyes

2.2. Sajha Kitab

Sajha Kitab is an online platform which connects buyer and seller directly for buying and selling used as well as new books. [2]

Pros

- Different categories of book available

- Sorting based on title, category, location and price

- Free ad post

Cons

- Seller details were public

2.3. Booksmandala

Booksmandala mission is to share the power of books and connect books with people by making discovering and buying books easy, entertaining, informative, and socially engaging. [3]

Pros

- Win free stuff and gift cards
- Ratings and reviews

Cons

- No wishlist

3. Methodology

3.1. Software Development Life Cycle

Our project is based on the prototype model. Prototype model is a software development model in which a prototype is built, tested, and reworked until an acceptable prototype is built.
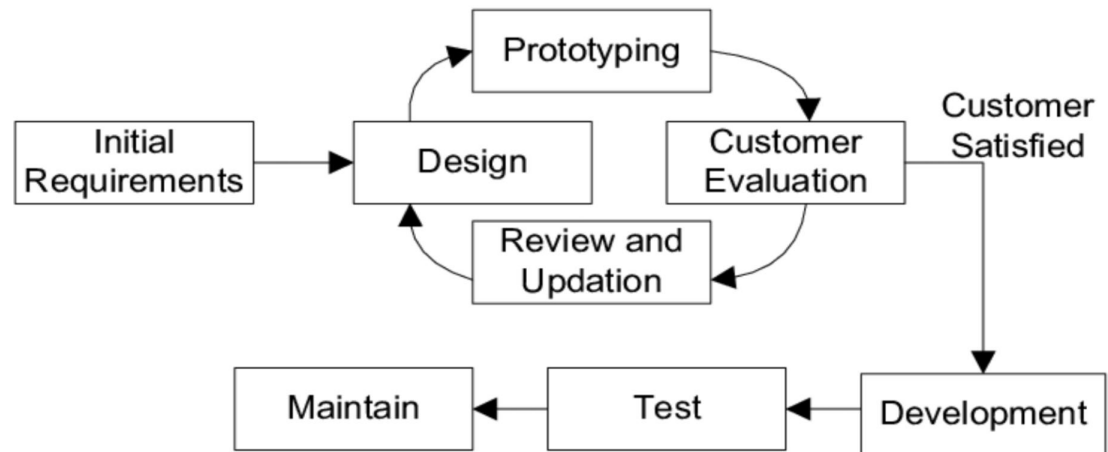
Figure 1: Software Development Life Cycle

For the development of this project we used the prototype model because of various reasons like error correction and features alternation. Since in this methodology a working model of the system is provided, the users get a better understanding of the system being developed. Allows to identify missing functionality early in the project. Quicker user feedback is available leading to better solutions and analyzing these feedbacks we introduced the features, worked on and implemented them by improvising. In case those features concluded as unnecessary, we removed and introduced the new features. On the other hand, we created the functions for certain tasks. If those functions perform operations other than the required one, we change

the functions. Analyzing these things, we decided to use the prototype model so that work flow will be assured.

3.2. Assignment of Roles and Responsibilities

S.N.	Member	Roles	Specific Task
1.	Shristi Pradhan	● Documentation ● Frontend	**Frontend** ● Landing Page **Documentation** 1. Literature review 2. Methodology 3. Functional Requirement
2.	Rupak Dangi	● Documentation ● Frontend	**Frontend** ● Signin and Signup Page **Documentation** 1. Feasibility study 2. Non-functional requirement
3.	Bishal Tamang	● Documentation ● Frontend ● Backend	**Frontend** **Documentation** 1. System Design **Backend**

Table 1: Roles and Responsibility

4. System Analysis

4.1. Requirement Analysis

For this project, there were certain requirements so that the project will be designed as per the requirement. Those requirements were as follows:

4.1.1. Functional Requirement

The functional requirements of this system are as follows:
- Users should be able to register and create an account using their email or social media accounts.
- Users should be able to view and edit their profiles, including updating contact details and shipping addresses.
- Users should be able to add books to a wishlist for future purchases.
- Users should be able to view a history of their past orders and track current orders.
- Admins and authorized sellers should be able to add, update, and remove book listings with details like title, author, genre, price, ISBN, and description.
- The system should categorize books based on genres, formats, and languages for easier navigation.
- Users should be able to search for books by genre and price sorting.
- Each book should have a detailed page containing the book's cover image, description, price, reviews, ratings, and additional metadata like publication year and edition.
- Users should be able to add books to a shopping cart, remove items, and proceed to checkout.

- Admins should have access to a dashboard where they can view and manage all orders, monitor sales, and track shipping statuses.
- Customers should be able to track the status of their orders (place, confirmation, arrival, packaging, completion).

4.1.2. Non-Functional Requirement

- **Usability**

  The system should be easy to use, with a clear and intuitive user interface, providing a positive user experience.

- **Reliability**

  The system should maintain accuracy as it updates the data from the database.

- **Compatibility**

  The website should be compatible with a range of devices and browsers, ensuring that all users can access the site regardless of their preferred platform.

4.2. Feasibility Study

For developing this project, we carried out some feasibility studies on the following topics, so that this project becomes fruitful. [4]

4.2.1. Technical Feasibility

The "Bookrack" system is to be developed using system development technologies such as Html, Sass, Java Script, jQuery, Bootstrap and Php without any anticipated problems. The group members possess the necessary skills and capabilities to effectively develop this project. Our focus is to create a well-organized dynamic website that is technically robust for managing an online platform where users can buy and sell books. Therefore, it can be concluded that the system is technically feasible.

4.2.2. Economic Feasibility

The "**Bookrack" system** is designed to be accessible to anyone, anywhere. The system offers significant cost-saving benefits for both "providers" and "readers". The "readers" can purchase the book for less than the actual cost. The "providers" old book does not become waste and by selling the book the "providers" can gain some few amounts.

The system is economically feasible because it minimizes the time and resources required for tasks such as inventory management, transaction processing, and customer interactions, reducing the need for manual labor, paper, and other traditional resources.

4.2.3. Schedule Feasibility

The time given for the project is around 13 weeks. weeks. According with our time duration, we have listed the activities in accomplishing

the project work with its schedule requirements which are list on the table below:

SN	Task	Start Month	End Month	Duration [Weeks]	Apr	May				June			July		Aug		
					3	1	2	3	4	1	2	3	3	4	2	3	4
1	Analysis	April	May	3	█	█	█										
2	Design	May	June	4				█	█	█	█						
3	Development	June	Aug	6							█		█	█	█	█	█
4	Testing	June	Aug	3								█			█		█
5	Documentation	April	Aug	13	█	█	█	█	█	█	█	█	█	█	█	█	█

Figure 2: Gantt Chart

5. System Design

5.1. System Architecture

The client-server architecture refers to a system that hosts, delivers, and manages most of the resources and services that the client requests. In this model, all requests and services are delivered over a network, and it is also referred to as the networking computing model or client server network.

First, the client sends their request via a network-enabled device. Then, the network server accepts and processes the user request. Finally, the server delivers the reply to the client.
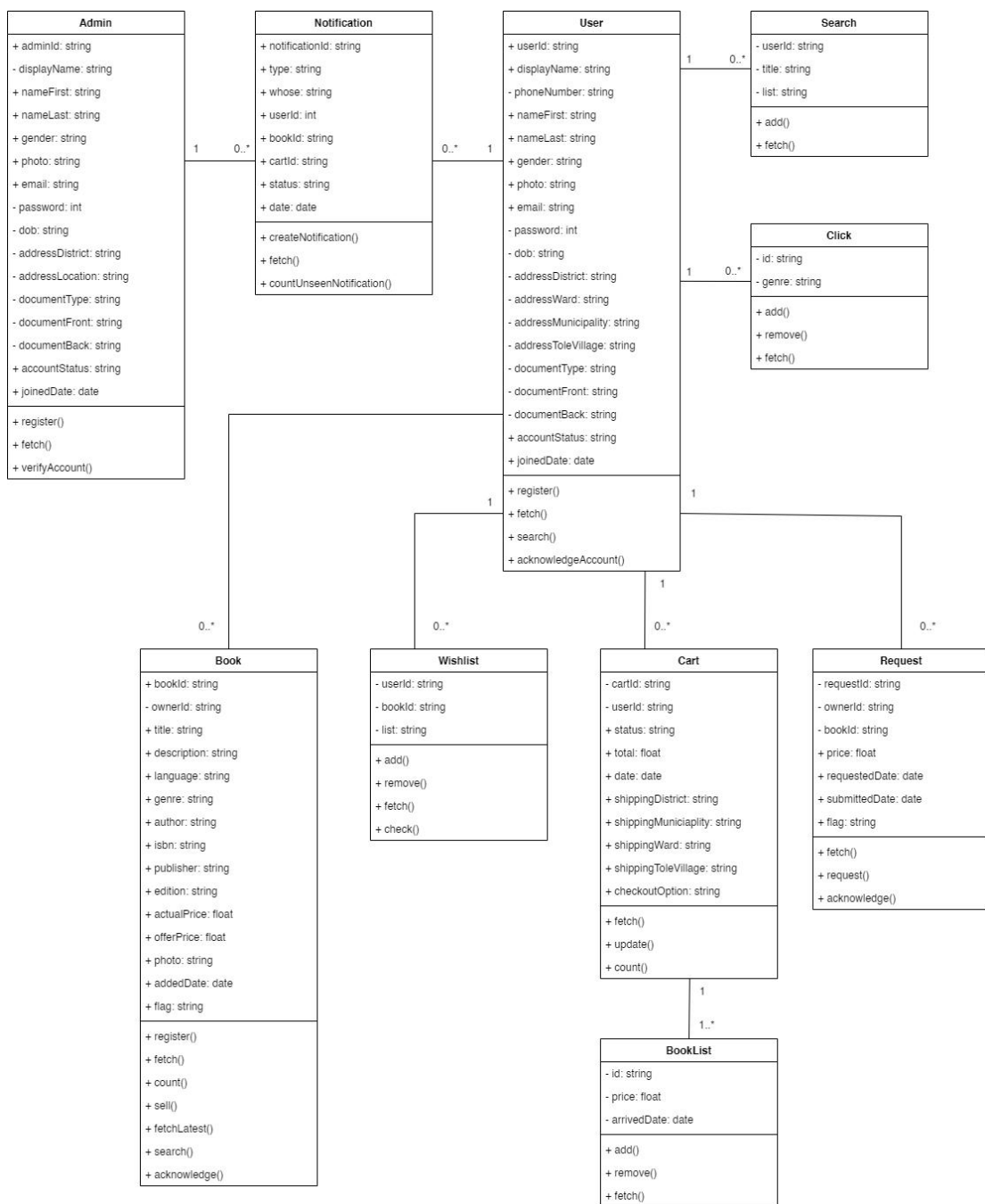
5.2. Object Oriented

5.2.1. Class Diagram

Admin

+ adminId: string
- displayName: string
+ nameFirst: string
+ nameLast: string
+ gender: string
+ photo: string
+ email: string
- password: int
- dob: string
- addressDistrict: string
- addressLocation: string
- documentType: string
- documentFront: string
- documentBack: string
+ accountStatus: string
+ joinedDate: date

+ register()
+ fetch()
+ verifyAccount()

Notification

+ notificationId: string
+ type: string
+ whose: string
+ userId: int
+ bookId: string
+ cartId: string
+ status: string
+ date: date

+ createNotification()
+ fetch()
+ countUnseenNotification()

User

+ userId: string
+ displayName: string
- phoneNumber: string
+ nameFirst: string
+ nameLast: string
+ gender: string
+ photo: string
+ email: string
- password: int
- dob: string
- addressDistrict: string
- addressWard: string
- addressMunicipality: string
- addressToleVillage: string
- documentType: string
- documentFront: string
- documentBack: string
+ accountStatus: string
+ joinedDate: date

+ register()
+ fetch()
+ search()
+ acknowledgeAccount()

Search

- userId: string
- title: string
- list: string

+ add()
+ fetch()

Click

- id: string
- genre: string

+ add()
+ remove()
+ fetch()

Book

+ bookId: string
- ownerId: string
+ title: string
+ description: string
+ language: string
+ genre: string
+ author: string
+ isbn: string
+ publisher: string
+ edition: string
+ actualPrice: float
+ offerPrice: float
+ photo: string
+ addedDate: date
+ flag: string

+ register()
+ fetch()
+ count()
+ sell()
+ fetchLatest()
+ search()
+ acknowledge()

Wishlist

- userId: string
- bookId: string
- list: string

+ add()
+ remove()
+ fetch()
+ check()

Cart

- cartId: string
- userId: string
+ status: string
+ total: float
+ date: date
+ shippingDistrict: string
+ shippingMuniciaplity: string
+ shippingWard: string
+ shippingToleVillage: string
+ checkoutOption: string

+ fetch()
+ update()
+ count()

Request

- requestId: string
- ownerId: string
- bookId: string
+ price: float
+ requestedDate: date
+ submittedDate: date
+ flag: string

+ fetch()
+ request()
+ acknowledge()

BookList

- id: string
- price: float
- arrivedDate: date

+ add()
+ remove()
+ fetch()

Figure 3: Class Diagram
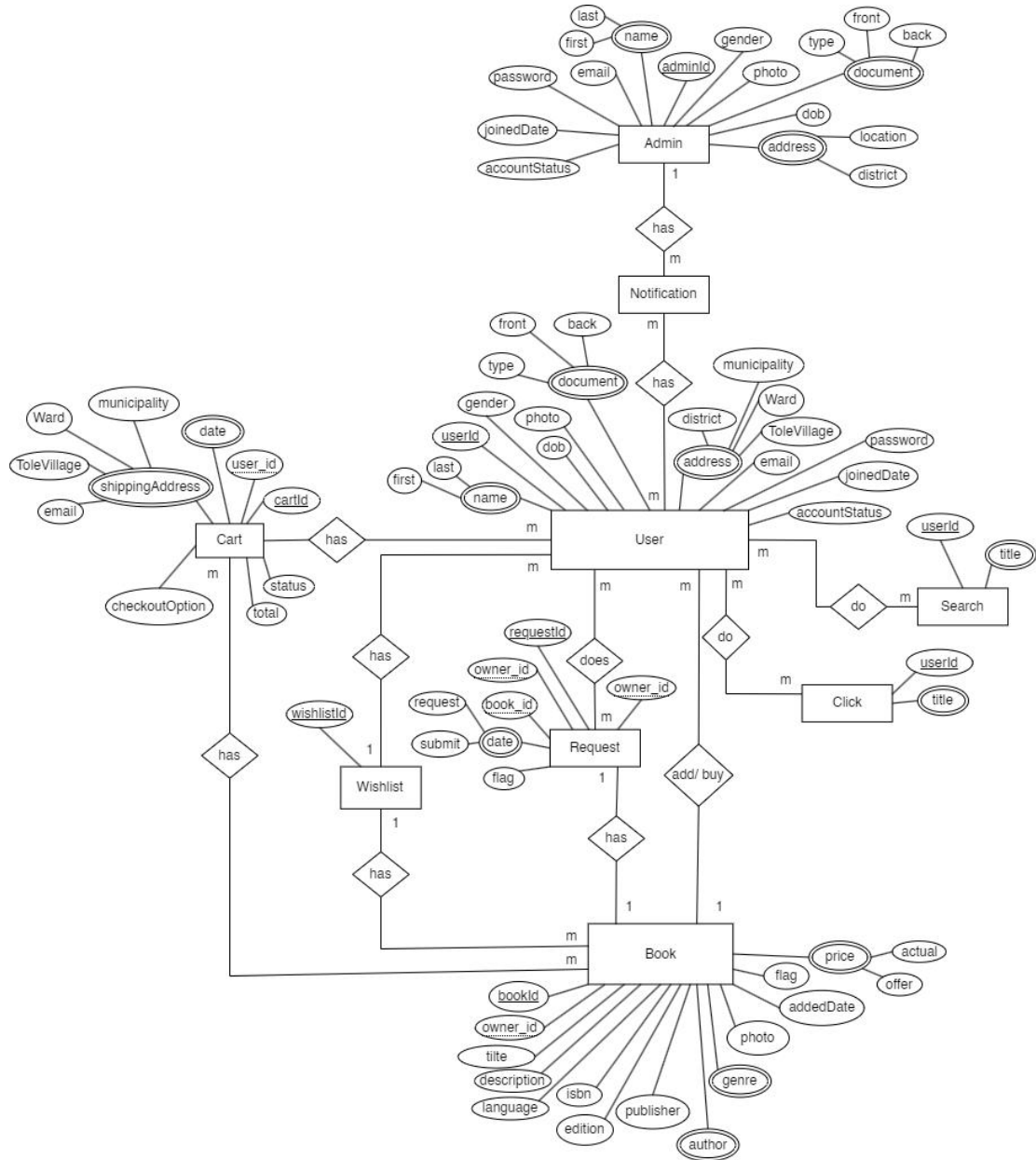
13

5.2.2. ER Diagram

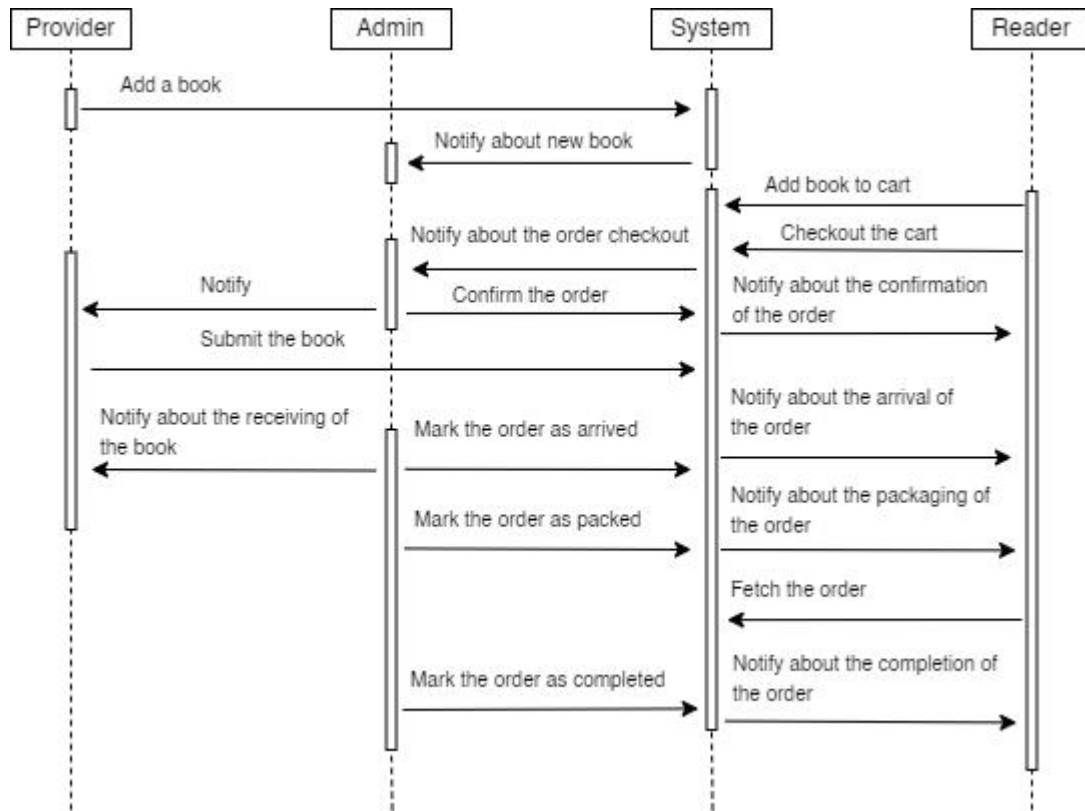
Figure 4: ER Diagram

5.2.3. Sequence Diagram

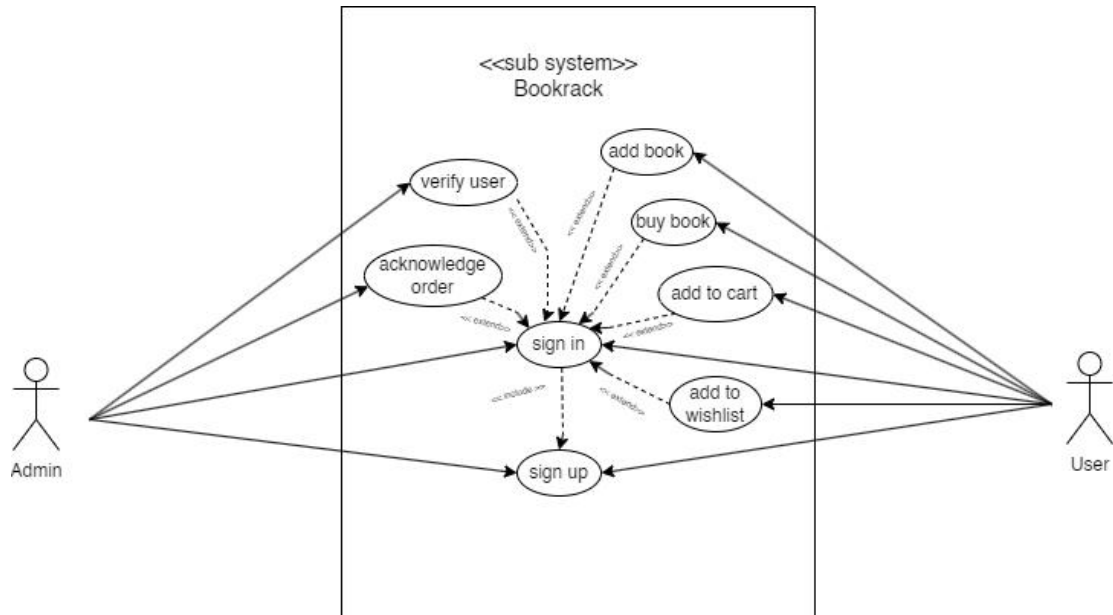
Figure 5: Sequence Diagram

5.2.4. Use Case Diagram

Figure 6: User Case Diagram

6. System Development and Implementation

6.1. Programming Platform

Frontend

- HTML

- SASS

- JQuery

- Javascript

Libraries

- Bootstrap 5.3

Backend:

- PHP 8.3

- Firebase

IDE

- Visual Studio Code 1.80

UI/ UX Design

- Figma

6.2. Development Platform

For the development of the project, the project members used a computer with the following specifications:

- Windows 11
- RAM installed of 16 GB
- 64-bit Operating System

7. Testing and Debugging

7.1. Testing Methodologies

7.1.1. White-box Testing

During the development of this project we used one of the testing techniques, white-box testing, since it is capable of uncovering errors or flaws in the implementation, such as incorrect logic or missing functionalities.

7.1.2. Black-box Testing

Another testing technique we used for this project is the black box testing. For achieving this, we categorized the functionalities based on the entities of this web application, and divided those categories among the team members.

7.2. Test Cases

ID	Test case Detail	Test Case Data	Expected Result	Actual Result	Status
T-01	Signup	Signup details	Verifying email and password	Successfully verified email and password.	Success
T-02	Sign in	Sign in details	Redirected to the home page.	Redirected to the home page.	Success
T-03	Search book	Genre	Show book based on the related genre.	Show book based on the genre.	Success

T-04	Add book	Book details	Addition of a new book.	Successfully new book added	Success
T-05	Update profile details	Name,address, dob, ph no	Update of profile details.	Successfully updated profile.	Success
T-06	Provider profile picture	Picture update	Update of profile when directed to home page.	Failure in updating profile when redirected to home page.	Failure
T-07	Provider profile picture	Picture update	Update of profile when directed to home page.	Profile picture updated when redirected to the home page.	Success
T-08	Add to wishlist	Books details	Addition of selected books in the wishlist.	Successful in adding the book selected in the wishlist.	Success
T-09	Add to cart	Book details	Addition of books in the cart.	Successfully added a book in the cart.	Success
T-10	Checkout	Book details	Book details checkout	Checkout pending book details.	Failure
T-11	Checkout	Book details	Book details checkout	Checkout of book details.	Success

Table 2: Test Cases

8. Conclusion

"Bookrack" is an online portal offering its platform for the book providers and readers. It puts forward this platform for selling second hand books for the readers in a convenient way. It allows providers to manage their books effortlessly. Providers can add their available book for sale in this platform easily while readers can purchase or pre order the books per their need. The readers can rent or purchase the book from the physical location or can have it delivered.

So, Bookrack is a platform where it's easier for the provider to add available books which helps readers to rent as their interest or choice in an easier way.

9. Reference

[1] Upadhyaya, B. A. (n.d.). *KitabKinBech.com | Buy and sell second hand books in Nepal.* KitabKinBech.com. https://kitabkinbech.pythonanywhere.com/

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