Tribhuvan University

Faculty of Humanities and Social Sciences

A PROJECT REPORT

ON

ONLINE BOOK SELLING AND BUYING PLATFORM

Submitted To

Department of Computer Application

Ratna RajyaLaxmi Campus

In partial fulfillment of the requirements for the Bachelors in Computer Applications

Submitted By

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August 2024

Under the Supervision of

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SUPERVISOR'S RECOMMENDATION

I hereby recommend that this project prepared under my supervision by "Binayak Basyal" entitled "ONLINE BOOK SELLING AND BUYING PLATFORM" in partial fulfillment of the requirements for the degree of Bachelor of Computer Application is recommended for the final evaluation.

_____

SIGNATURE

Shree Krishna Maharjan

SUPERVISOR

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LETTER OF APPROVAL

This is to certify that this project prepared by **Binayak Basyal** entitled "**ONLINE BOOK SELLING AND BUYING PLATFORM**" in partial fulfillment of the requirements for the degree of Bachelor in Computer Application has been evaluated. In our opinion it is satisfactory in the scope and quality as a project for the required degree.

Signature of Supervisor _____ Shree Krishna Maharjan Department of BCA Ratna RajyaLaxmi Campus Pradarshani Marg, Kathmandu	**Signature of HOD/Coordinator** _____ Mr. Bhupendra Ram Luhar Department of BCA Ratna RajyaLaxmi Campus Pradarshani Marg, Kathmandu
Signature of Internal Examiner _____	**Signature of External Examiner** _____

ABSTRACT

The **Online Book Selling and Buying Platform** is a web-based system designed to manage book-related information efficiently. The primary goal of this project is to create a platform where users can easily register, buy, and sell books. The system allows users to view, update, and delete book listings, as well as manage their profiles. Administrators have the ability to approve user registrations, add book categories, and remove books or users from the database. This platform helps organize book data digitally, reducing the need for physical paperwork and providing a convenient online solution for buying and selling books.

Keywords: ***book management, registration, buying and selling, database management***

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Binayak Basyal (6-2-40-12-2020)

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Chapter 1 INTRODUCTION

1.1. Introduction

The Book Selling and Buying Platform is a web-based application where users can purchase different types of used and brand-new books online. The main objective of this system is to offer a convenient way to buy and sell books at affordable prices without visiting different bookstores. Users can search for books by title, author, and subject using any web browser.

Users can set up an account by providing their name, phone number, address, and more. After registration, users can log in using their account credentials. This project aims to develop a basic e-commerce website where users can sell their used and new books and buy them. The online platform offers a user-friendly environment for people to buy and sell books. It also provides a wide variety of books, making it a popular choice for book lovers. Users can easily find and purchase books directly from sellers, facilitating smooth transactions.

The website is being developed using HTML, CSS, and JavaScript for the frontend, and SQL and PHP for the backend. Various book-related details are stored in a SQL database. The system includes a verification process for user IDs to ensure security and privacy, preventing fraudulent activities and ensuring only genuine users can access the system.

Administrators have access to a separate module where admin can log in, verify user IDs, and monitor the system. They can add new book categories, such as fiction, non-fiction, and academic, to make it easier for users to search for and find the books they want.

This online bookstore system is a great initiative for book lovers. Its user-friendly interface, extensive book collection, and secure platform make it a popular choice for online book shopping. The purpose of this system is to provide a seamless and enjoyable experience for users looking to buy and sell books from the comfort of their homes

1.2. Problem Statement

It was found that searching for specific books sometimes makes students and book lovers spend more than budgeted on books and it consumes lots of time for searching books. While surfing different websites for bookstores there was not categorized properly to the book lover-based books. Many web-based platforms for book purchasing and selling are found congested.

1.3. Objectives

The main objective of this project is:

- To create and implement a system that will allow users to buy and sell used books as well as brand-new books.
- To search for the books, they wanted on websites instead of going to the different physical bookstores.
- To categorize books in every sector of education for book lovers & fiction-based and subcategories.

1.4. Scope and Limitation

1.1.1. Scope

The project's scope includes developing a functional online book buying and selling system allowing users to register, log in, search for books, and purchase, and sell books. The system also includes an administrative module for managing user accounts and inventory. The focus is on the basic features and functionality of an online bookstore.

1.1.2. Limitation

However, it is important to note that the project may have limitations in terms of advanced features like personalized recommendations, advanced book filtering, and integration with external payment gateways. These advanced features may require additional development effort and integration with third-party services.

1.5. Development Methodology

For the development of the Online Book Buying and Selling Platform, iterative waterfall model is used. This approach ensured that each phase is completed before moving to the next, maintaining a structured and systematic development process and also allowing to give feedbacks.

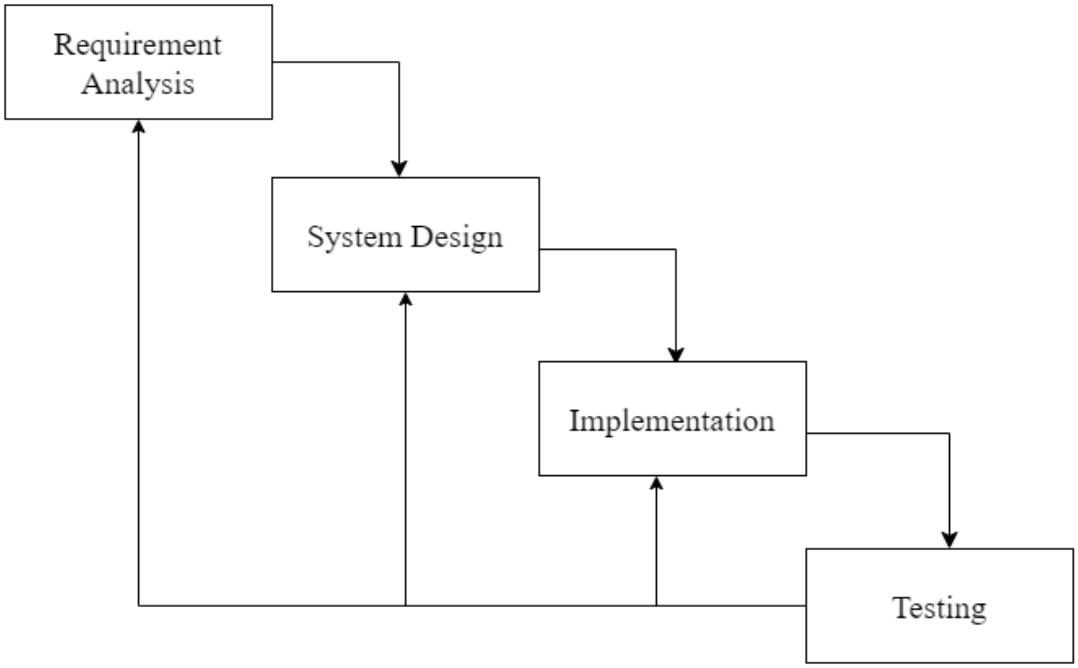

Figure 1.1 Iterative Waterfall Model of Online Book Buying and Selling Platform

1.6. Report Organization

The report can be organized into 5 chapters which are given below:

Chapter 1 includes introduction includes a brief introduction of the system, a statement of the problem, objectives, scope, and limitations.

Chapter 2 includes a background study and the literature review includes the previous work related to the systems and similar works were studied and are summarized.

Chapter 3 includes system analysis and design including different feasibility analyses and designed system architecture, system flow diagram, and dataflow diagram.

Chapter 4 includes implementation and testing including various implementation methods and tools and also contains a description of testing.

Chapter 5 includes the conclusion and future recommendations including outcomes of the system, the conclusion to the system, and a description of what features can be added in the future.

Chapter 2 BACKGROUND STUDY AND LITERATURE REVIEW

2.1. Background Study

The online book buying & selling platform has experienced significant growth over the past decade. With the increasing popularity of e-commerce and the widespread use of digital devices such as e-readers and smartphones, more and more consumers are turning to online platforms to purchase books. This shift in consumer behavior has led to the emergence of various online bookstores that cater to different niches and preferences. From large-scale platforms like Amazon, which offer a vast selection of books across genres, to specialized platforms focusing on specific genres or independent authors, the online bookstore market is diverse and competitive. This indicates a strong demand for online book purchasing and presents an opportunity for the development of innovative and user-friendly online bookstore systems.

The advantages of online book buying and selling platform extend beyond convenience and accessibility. They also provide a platform for independent authors and self-publishers to showcase and distribute their works. Traditional publishing models often involve significant barriers to entry, making it challenging for aspiring authors to get their books into the hands of readers. However, online bookstores have democratized the publishing industry by allowing authors to self-publish and reach a global audience. This has led to the discovery of new and unique voices in literature, enabling readers to explore a wide range of perspectives and genres. Additionally, online bookstores often provide features for readers to leave reviews and ratings, creating a community-driven environment that facilitates engagement and recommendations among readers.

2.2. Literature Review

The website named Sajha Kitab is utilized for the direct connection of customers and sellers who are interested in purchasing and selling both new and Second-hand books. Several books, including syllabus books, novels, fiction, and comics, have been read since the early years. While many of these books were considered garbage and sold by weight in kilograms, others were prized and well-preserved. The fullest possible use of these books can be represented by the possibility of recycling them in a paper plant. Even though they may only seem to be a stack of documents, they have the power to influence someone's future. Someone's life can be greatly impacted even though they are outdated, as some students cannot buy new books. In essence, these two groups of people are linked by this

website, where old books are published by sellers on the website so that someone in need may buy them for a reasonable price. It is advised that used books be sold prudently and humbly since the website does not charge commissions because it is merely giving back to society. [1]

A simple interface to buy books is provided by the website SecondSale. User registration is required to log into the system. In this system, users can add and edit their information. Both brand-new and used books can be purchased at cheap prices. Books can be found through their categories, subcategories, top series, and top authors, and can also be searched by ISBN, title, author, or keywords. Books can be added to the wish list if not found and added to a cart for purchase. [2]

Thuprai has created an e-book platform that gives Nepali readers access to books from several significant local publishers. As a result, it is the sole commercial platform where local publishers and authors may sell e-books to customers. E-books may easily be read through Android and iOS apps, and new titles are constantly being added. [3]

Goodreads, a social networking platform for book lovers, provides a unique experience by combining book discovery, reviews, and social interaction. Users can create virtual bookshelves, track their reading progress, write reviews, and engage with other readers through discussions and recommendations. Goodreads has become a valuable resource for readers seeking personalized book recommendations and connecting with fellow book enthusiasts. [4]

Books Mandala is a helpful website that connects people who want to buy and sell both new and used books. It offers a wide range of books, from school textbooks and novels to comics and children’s books. Many of these books, which might have been thrown away or ignored, can still change someone’s life by providing knowledge or entertainment, especially for those who can't afford new ones. On this site, sellers can list their old books, and buyers can find great deals on reading material. The easy-to-use platform allows users to search for books by categories or titles and even save books they want for later. [5]

Amazon uses a method called Bag of Words (Bow) in its recommendation system to help suggest products based on their descriptions and customer reviews. This approach breaks down product descriptions into individual words, counts how often each word appears, and uses this information to compare different products. For example, if someone searches for "wireless headphones," the system finds other products with similar words in their descriptions, even if the user hasn't shown interest in those products before. This helps

Amazon recommend relevant items, especially for new products or those with little customer interaction, making the shopping experience more personalized. [6]

Chapter 3 SYSTEM ANALYSIS AND DESIGN

3.1. System Analysis

Requirement collection provides a detailed analysis of user requirements, functional & nonfunctional requirements, and system requirements. The front-end is done using HTML&CSS whereas in the back-end JavaScript is used for Client-side and PHP for the Server side. MySQL is used for Database programming. And the entire Coding/ Programming is done in Visual Studio Code

3.1.1. Requirement Analysis

The requirement analysis of Online Book Selling and Buying Platform is done through finding the functional requirements and non-functional requirements for the system.

Functional Requirements

Functional requirements were identified through the creation of use case diagrams, which helped in determining the essential functionalities of the Online Book Selling and Buying Platform. These functionalities were mapped out to ensure that the system supports users in achieving their goals efficiently.

Use Case Diagram

User Module

- Users can easily register and create accounts on the system.
- Convenient login and logout options for user accessibility.
- Users can explore the book selection available on the platform.
- Users can add their favorite books to a virtual shopping cart for future reference.
- Users can list their own books for sale.
- Users can edit book descriptions and prices for their listings.
- Effective search feature to find specific books quickly.
- Users can manage their profiles and update personal information.

Admin Module

- Administrators can define and add book categories to maintain platform organization.
- Ability to view and manage user accounts, allowing for monitoring of user activity.
- Administrators play a crucial role in managing the accuracy, quality, and compliance of book listings.
- Administrators can oversee and maintain the integrity of the platform's book listings.

Use Case Diagram of an Online Book Selling and Buying Platform

Figure 3.1 Use case Diagram of Online Book Selling and Buying Platform

Non-Functional Requirements

Availability

The system needs to be online all the time so that users can use it whenever they want. If something goes wrong and the system isn't working, the admin should be able to fix it quickly. This helps make sure people can always use the system without big problems.

Performance

The system should work quickly and smoothly. Pages should load fast, and everything should work well when users click on things. This makes users happy and helps the system show up better on search engines.

Reliability

People should be able to trust the system. It should work properly every time they use it. This trust is important, especially when people are using the system for important things like buying stuff or sharing personal information. When the system is reliable, users will feel good about using it again and again.

3.1.2. Feasibility Analysis

Technical Feasibility

By developing a website using the Laravel framework, users can browse, search, and view comprehensive information on books, creating an efficient online platform for buying and selling books. Laravel provides a robust and scalable backend, while Tailwind CSS enhances the frontend with a user-friendly and responsive layout. The platform will include effective search and filtering features, along with additional functionalities such as book categories and personalized book suggestions based on user activity. The project utilizes Laravel and MySQL as the backend, with HTML, Tailwind CSS, and JavaScript for the frontend, making it easily deployable on any system. With MySQL as the database, the system can efficiently process large amounts of data, ensuring the project is technically feasible.

Operational Feasibility

With the right preparation and execution, an online system for purchasing and selling books built with Laravel is operationally feasible. The system's user-friendly design, supported by Tailwind CSS, ensures ease of use for all users without the need for specific training.

Economic Feasibility

Cost estimates can be made after examining the total requirements. All the resources required to complete the project, including Laravel and Tailwind CSS, are available as open-source, reducing the overall project cost.

Schedule Feasibility

Schedule feasibility was assessed to determine whether the project timeline and deadlines were reasonable. Consideration was given to the constraints of limited time, ensuring that the project could be completed within the specified timeframe, even under mandatory deadlines.

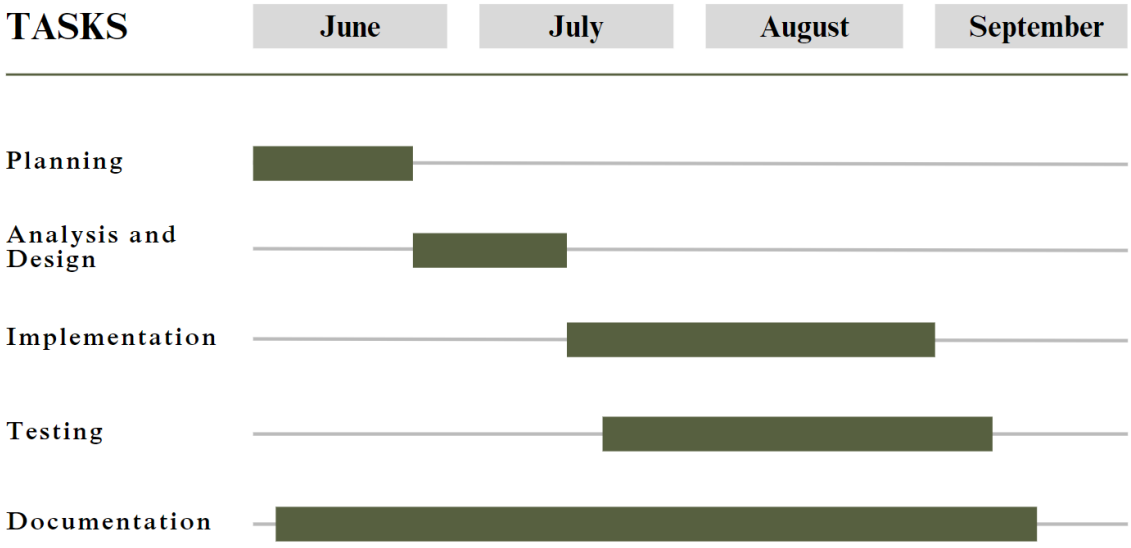

Figure 3.2Gantt Chart of Online Book Selling and Buying Platform

3.1.3. Object Modeling

Class Diagram

This class diagram represents the structure and relationships within the database models of Online Book Selling and Buying Platform, including the differentiation of user roles and the necessary associations.

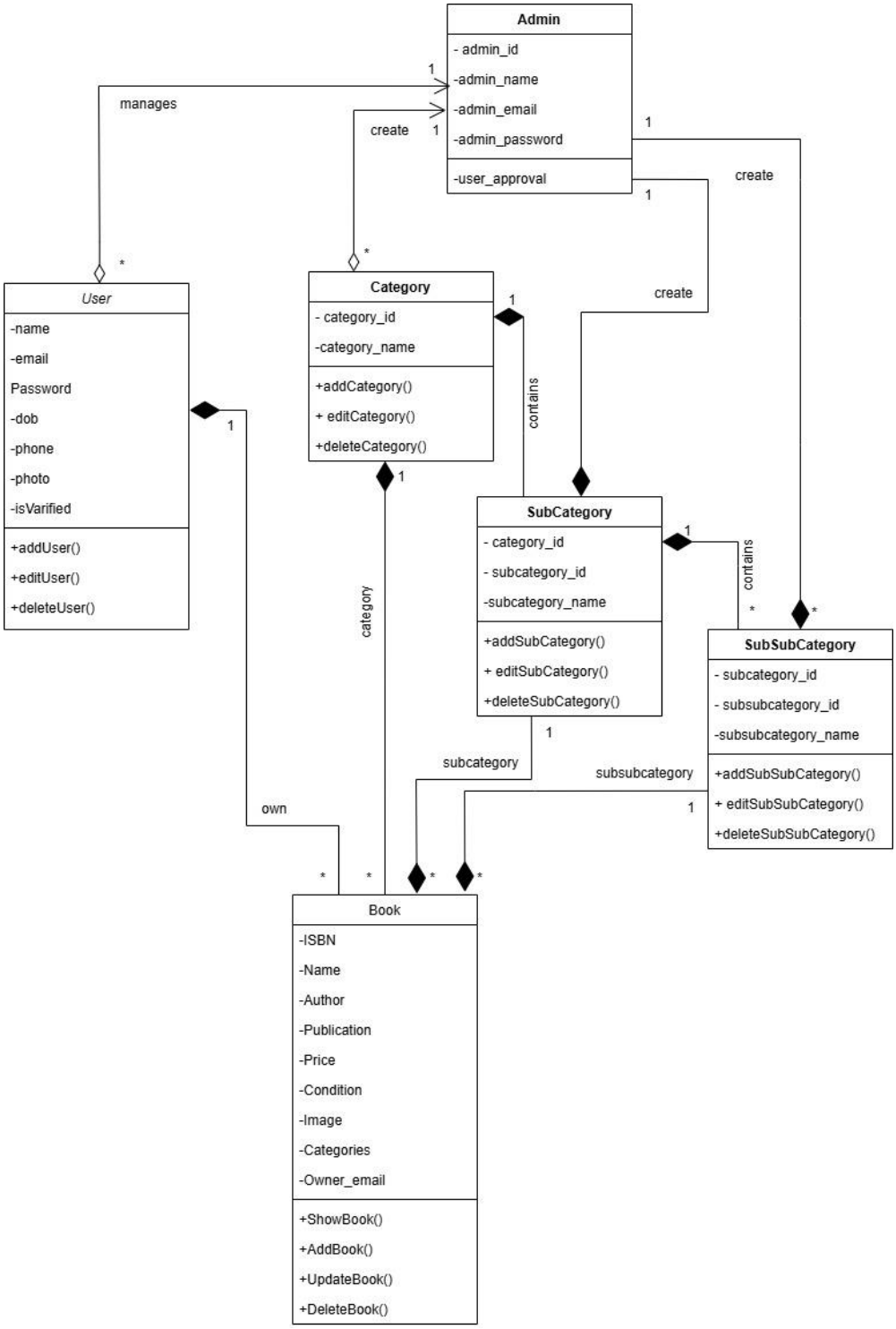

Figure 3.3 Class Diagram of Online Book Selling and Buying Platform

Object Diagram of Online Book Selling and Buying Platform

The following object diagram illustrates a specific snapshot of Online Book Selling and Buying Platform, showcasing the relationships and states of various objects within the system. The diagram provides a clear view of how various entities within the system are interrelated, showing the interactions between users and the books they engage with along with other entities.

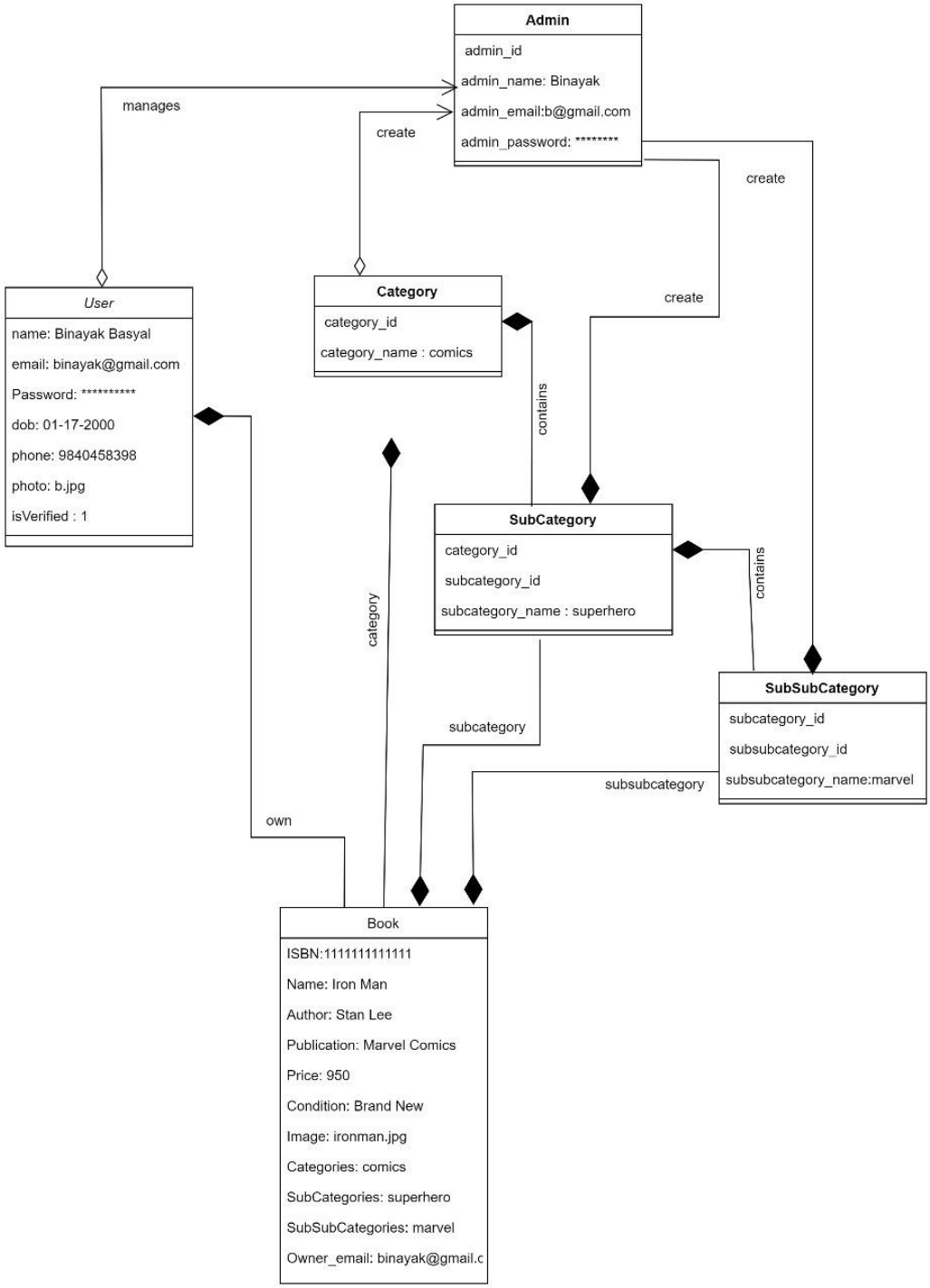

Figure 3.4 Object Diagram of Online Book Selling and Buying Platform

3.1.4. Dynamic Modeling: State and Sequence Diagram

State Diagram of Online Book Selling and Buying Platform

The following state diagram demonstrates different lifecycle states that the different entities go through.

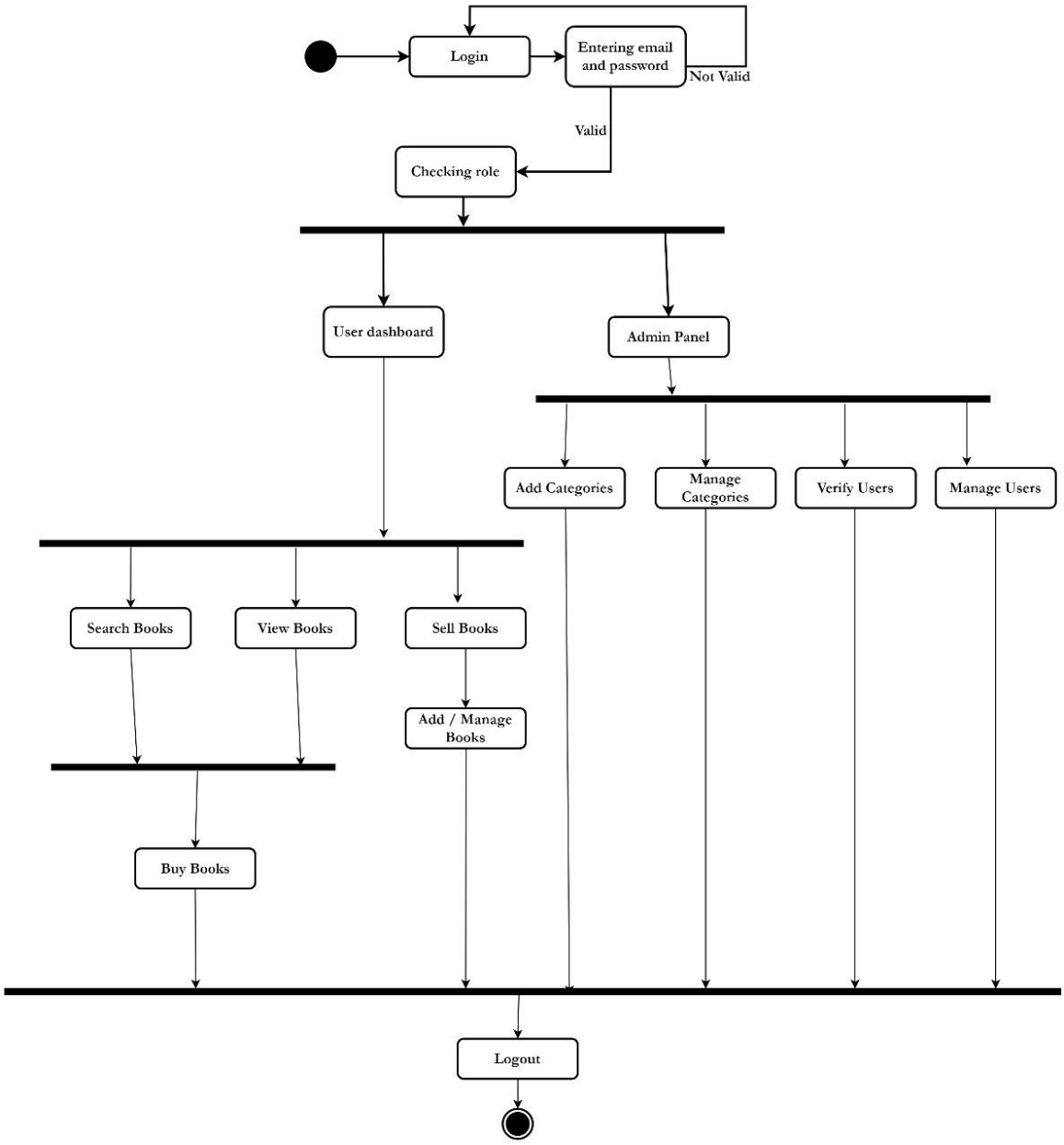

Figure 3.5 State Diagram of Online Book Selling and Buying Platform

Sequence diagram of Online Book Selling and Buying Platform

This sequence diagram illustrates the interactions among objects in a sequential order. In the context of Online Book Selling and Buying Platform, the sequence diagram captures the dynamic behavior of the system, depicting how various components interact to perform specific functionalities. As the system have different actors, the following sequence diagram depicts the actions that can be taken by Admin and User.

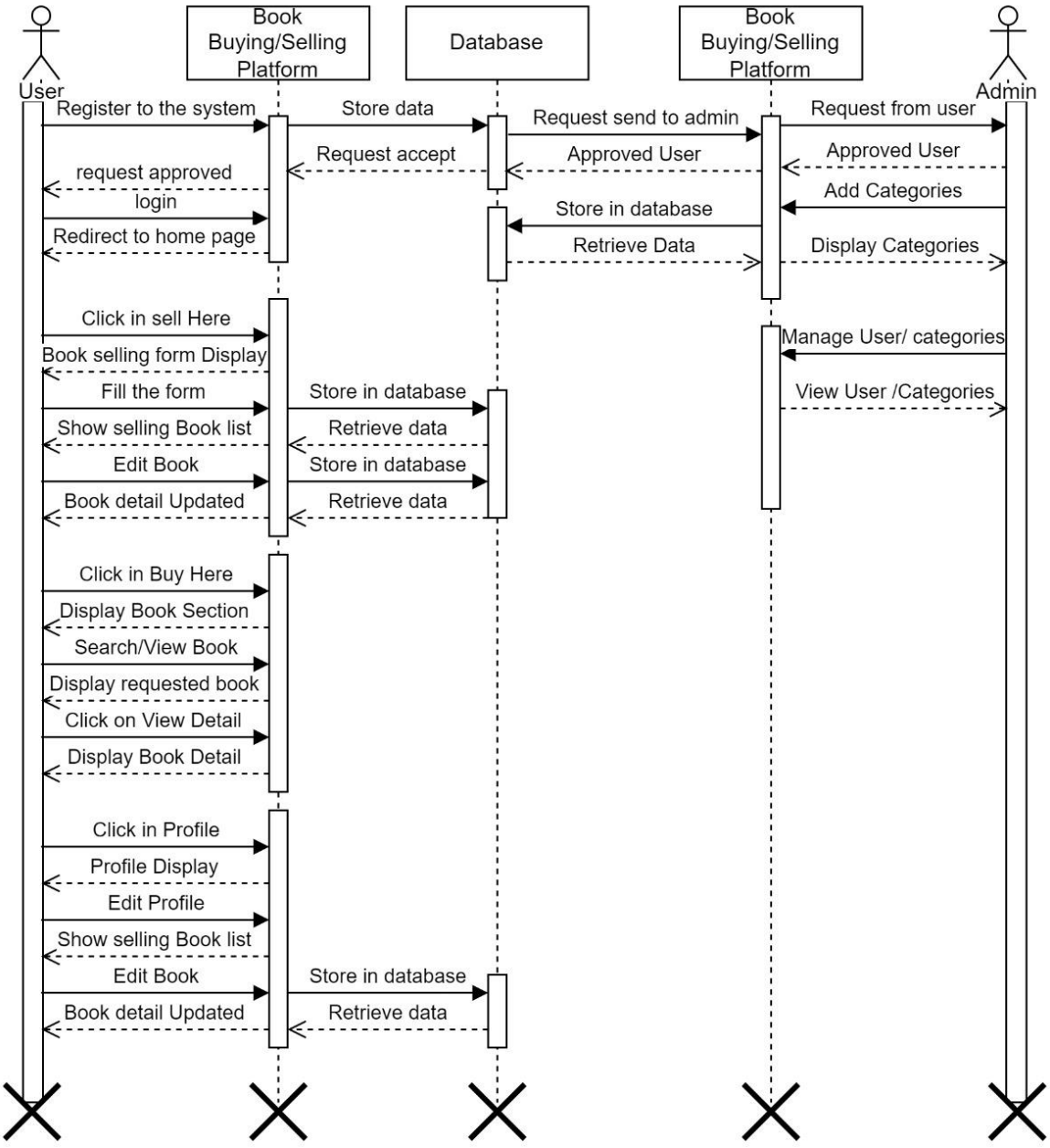

Figure 3.6 Sequence Diagram of Online Book Selling and Buying Platform

3.1.5. Process Modeling: Activity Diagram

The following two activity diagrams illustrate the processes within an Online Book Selling and Buying Platform. The first diagram outlines the admin's workflow, starting from logging in, accessing the admin panel, creating and updating categories, verifying and managing user's and managing books. The second diagram details the user journey from registration, logging in, viewing home, viewing available books in the system, searching books, viewing books details & similar books recommendation, adding book to the system for sale, viewing their profile and edit details.

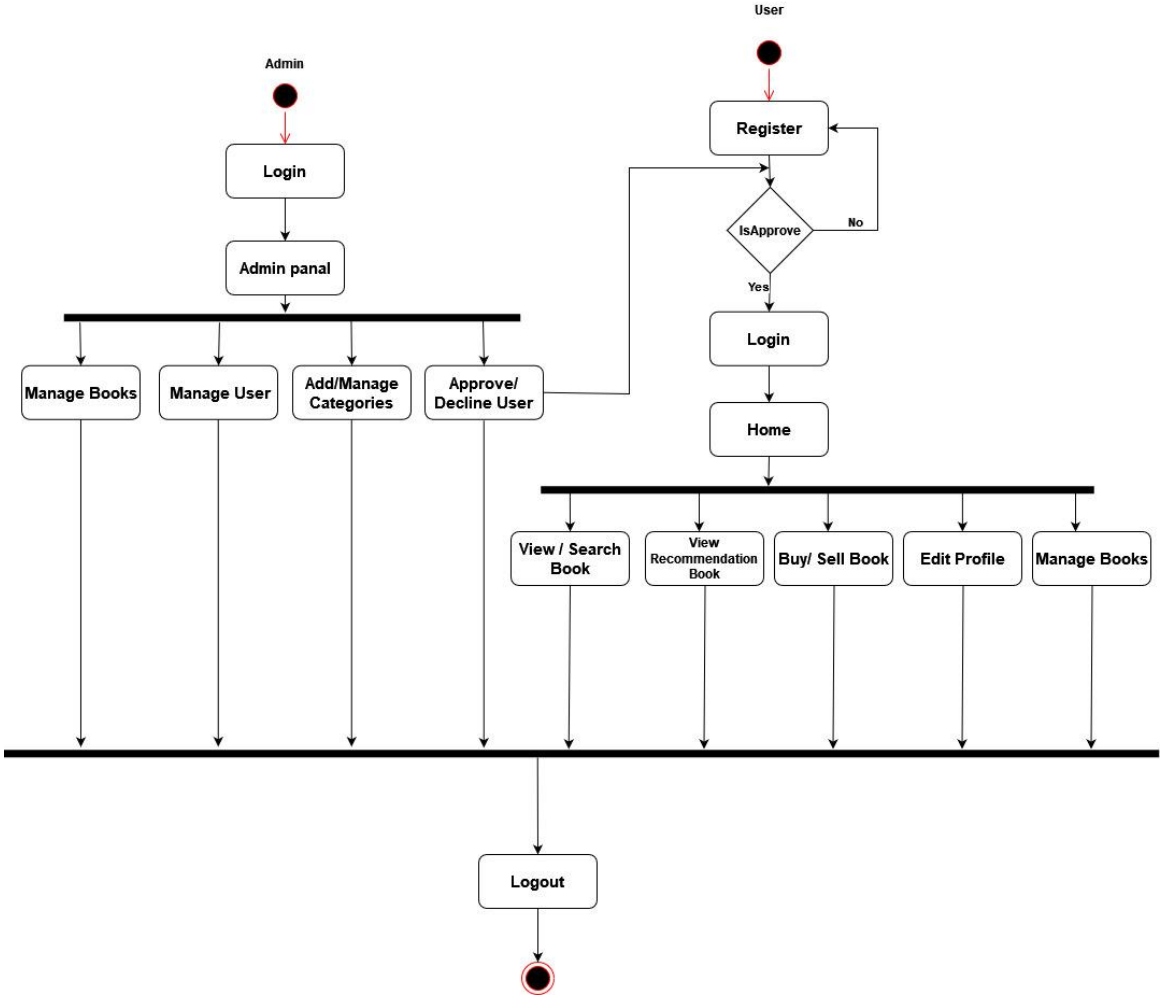

Figure 3.7 Activity Diagram of Online Book Selling and Buying Platform

3.2. System Design

During the system design phase, the analysis is taken to another step where existing class and object diagrams are refined and component and deployment diagram are constructed.

3.2.1. Refinement of Classes and Object

In the following refined diagram, the existing class diagram has been refined by adding more detail. The diagram consists of method signatures, return types and parameter types.

While the class diagram showed the overview of the system, the refined class diagram adds more detail for actual implementation.

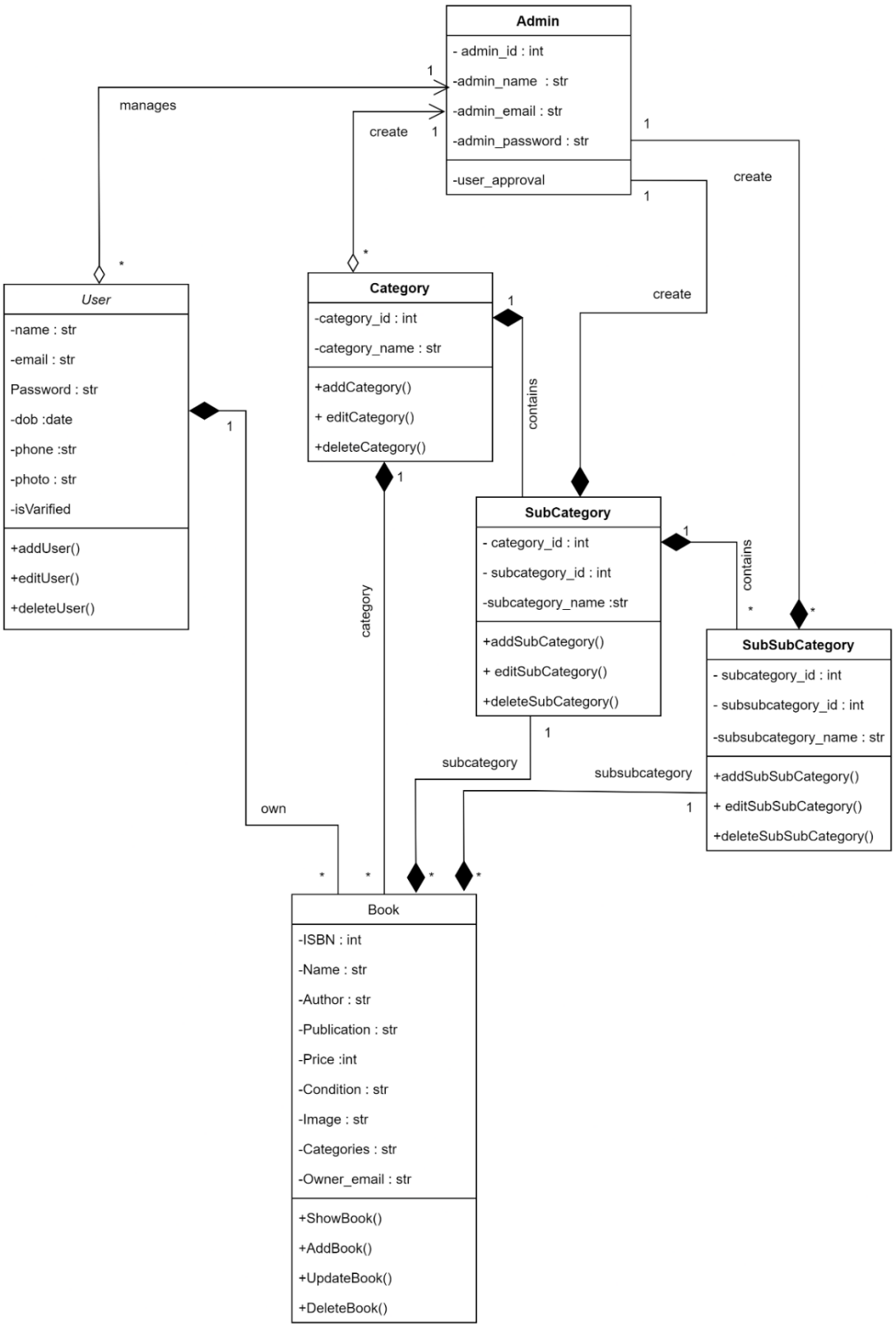

Figure 3.8 Refinement of Classes and Object Diagram of Book Selling and Buying Platform

3.2.2. Component Diagram of Online Book Selling and Buying Platform

The component diagram below illustrates the physical components of Online Book Selling and Buying Platform and their interactions. With its help we are able to visualize the overall structure and organization of system.

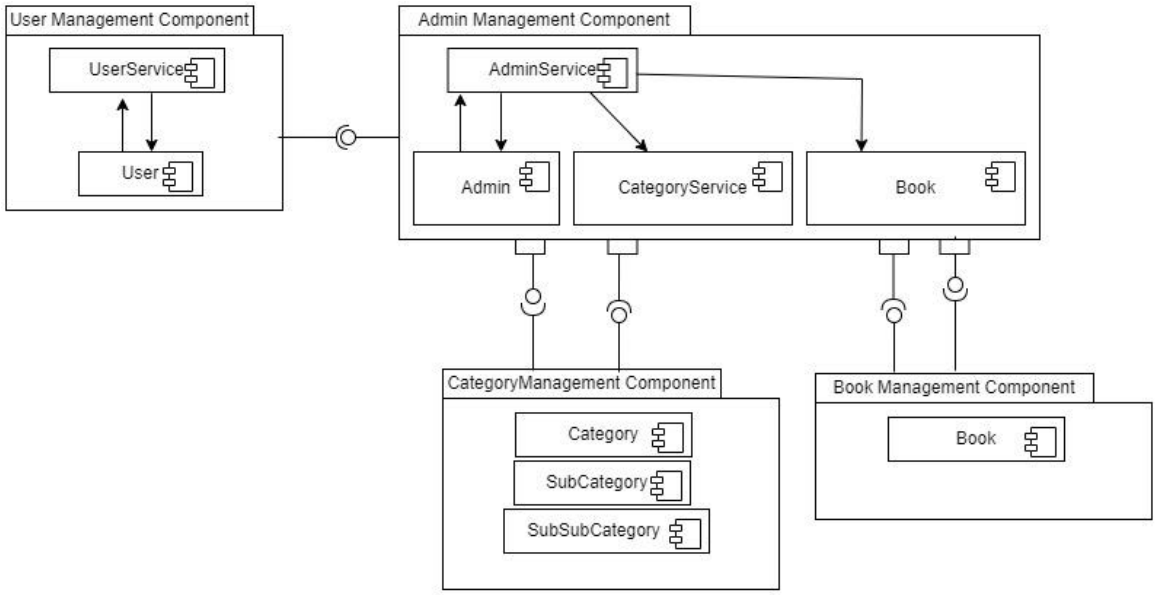

Figure 3.9 Component Diagram of Online Book Selling and Buying Platform

3.2.3. Deployment Diagram

The following deployment diagram illustrates how software components are distributed across hardware nodes and how they interact with each other in a runtime environment.

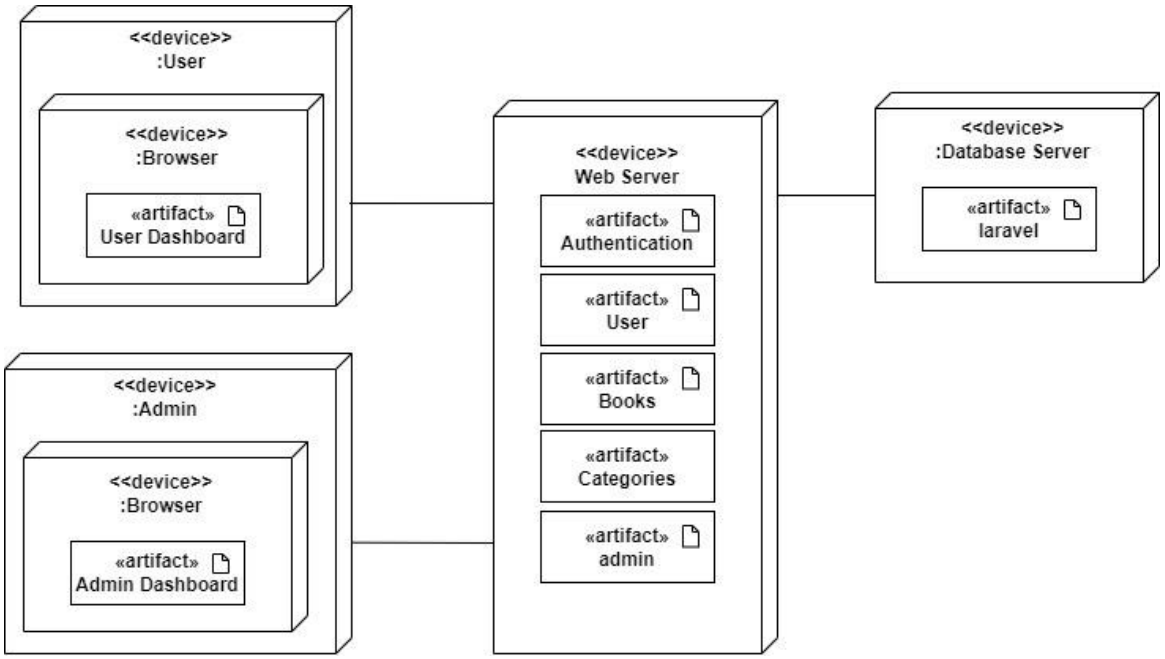

Figure 3.10 Deployment Diagram of Book Selling and Buying Platform

3.3. Algorithm Details

In "Pick Your Book," a content-based recommendation system will be implemented using the Bag of Words (BoW) text vectorization method. This system will help users discover books relevant to their interests based on attributes such as book titles, authors, categories, and subcategories.

Bag of Words (Bow)

The Bag of Words model is a method that converts textual data into a numerical format by analyzing the frequency of words, ignoring their order. The key components of the Bow model include:

1. Vocabulary Creation

The first step is to build a vocabulary, which consists of all unique words found across the book data (titles, authors, category, and subcategories). This vocabulary will be used to generate vector representations for each book.

Example:

Consider three books with the following titles:

Book 1: "The Great Gatsby," Author: "F. Scott Fitzgerald," Category: "Fiction," Subcategory: "Classic"

Book 2: "Great Expectations," Author: "Charles Dickens," Category: "Fiction," Subcategory: "Classic"

Book 3: "The Catcher in the Rye," Author: "J.D. Salinger," Category: "Fiction," Subcategory: "Contemporary"

The resulting vocabulary might be:

Vocabulary =["great", "gatsby", "expectations", "catcher", "rye", "f.", "scott", "fitzgerald", "charles", "dickens", "j.d.", "salinger", "fiction", "classic", "contemporary"]

2. Term Frequency (TF)

Term Frequency measures how frequently a term appears in a document. For each book, TF is calculated as the count of occurrences of each term from the vocabulary.

Formula: TF (t, d) = Number of occurrences of term t in book d

Example**:**

Book 1: "The Great Gatsby"

- Terms: "great", "gatsby", "f.", "scott", "fitzgerald", "fiction", "classic"
- **TF**:
    - "great": 1
    - "gatsby": 1
    - "f.": 1
    - "scott": 1
    - "fitzgerald": 1
    - "fiction": 1
    - "classic": 1

Book 2: "Great Expectations"

- Terms: "great", "expectations", "charles", "dickens", "fiction", "classic"
- **TF**:
    - "great": 1
    - "expectations": 1
    - "charles": 1
    - "dickens": 1
    - "fiction": 1
    - "classic": 1

Book 3: "The Catcher in the Rye"

- Terms: "catcher", "rye", "j.d.", "salinger", "fiction", "contemporary"
- **TF**:

- "catcher": 1
- "rye": 1
- "j.d.": 1
- "salinger": 1
- "fiction": 1
- "contemporary": 1

3. Vector Representation

After calculating TF, each book is represented as a vector of term frequencies. The vector's length corresponds to the vocabulary size, with each element indicating the frequency of a specific term.

Vector for "The Great Gatsby" (A):

- **BoW Vector (A)**:

A = [1,1,0,0,0,1,1,1,1,0,0,0,0,1,1]

Vector for "Great Expectations" (B):

- **BoW Vector (B)**:

B = [1,0,1,0,0,0,0,0,1,1,0,0,0,1,1]

Vector for "The Catcher in the Rye" (C):

- **BoW Vector (C)**:

C = [0,0,0,1,1,1,1,0,0,0,1,1,0,0,1]

Cosine Similarity

Cosine similarity quantifies how similar two documents (books) are, regardless of their size, by calculating the cosine of the angle between their vector representations.

Formula: Cosine Similarity ($cos\theta$) = $\frac{A.B}{|A||B|}$

Where:

- A·B is the dot product of vectors A and B.
- |A| is the magnitude of vector A.
- |B| is the magnitude of vector B.

Interpretation:

- A cosine similarity of 1 indicates that the vectors are identical (very similar books).
- A cosine similarity of 0 indicates no similarity.
- A cosine similarity of -1 indicates that the vectors are diametrically opposed.

Example Calculation

Step 1: Calculate the Dot Product A·B:

A·B = (1×1) + (1×0) + (0×1) + (0×0) + (0×0) + (1×0) + (1×0) + (1×0) + (1×1) + (0×1) + (0×0) + (0×0) + (0×0) + (1×1) + (1×1) = 2

Calculate the Dot Product A·C:

A·C = (1×0) + (1×0) + (0×0) + (0×1) + (0×1) + (1×1) + (1×0) + (1×0) + (1×0) + (0×0) + (0×0) + (0×1) + (0×0) + (1×0) + (1×1) = 1

Step 2: Calculate Magnitudes:

‖A‖=

$$\sqrt{(1^2 + 1^2 + 0^2 + 0^2 + 0^2 + 1^2 + 1^2 + 1^2 + 1^2 + 0^2 + 0^2 + 0^2 + 0^2 + 1^2 + 1^2)} = \sqrt{7} \approx 2.646$$

‖B‖=$\sqrt{1^2 + 0^2 + 1^2 + 0^2 + 0^2 + 0^2 + 0^2 + 0^2 + 1^2 + 1^2 + 0^2 + 0^2 + 0^2 + 1^2 + 1^2)} = \sqrt{6} \approx 2.449$

‖C‖=

$$\sqrt{(0^2 + 0^2 + 0^2 + 1^2 + 1^2 + 1^2 + 1^2 + 0^2 + 0^2 + 0^2 + 1^2 + 1^2 + 0^2 + 0^2 + 1^2)} = \sqrt{6} \approx 2.449$$

Step 3: Calculate Cosine Similarity:

Cosine Similarity (A, B) = $\frac{2}{2.646 \times 2.449} \approx \frac{2}{6.469} \approx 0.309$

Cosine Similarity (A, C) = $\frac{1}{2.646 \times 2.2449} \approx \frac{1}{6.469} \approx 0.155$

This indicates a moderate similarity between "The Great Gatsby" and "Great Expectations."

Recommendation Process

1. For a given book that a user likes, calculate the similarity between its vector and the vectors of all other books in the database.
2. Rank the books based on their similarity scores, with the highest scores indicating the most similar books.
3. Recommend the top-ranked books to the user, offering suggestions that align closely with their interests based on the content of the book they are currently viewing.

Chapter 4 IMPLEMENTATION AND TESTING

4.1. Implementation

4.1.1. Tools Used

Diagram Tool:

Draw.io was used to create all the system designs required for this project. It is a proprietary software used for creating use case diagrams, flowcharts, interface designs, ER diagrams, physical diagrams, and DFD diagrams.

Web Application Development Tools:

Various tools were utilized to design and develop the web application for this project.

HTML:

HTML was used in our project to create the structure and content of web pages. We utilized HTML tags to define various elements, such as headings, paragraphs, images, and links, ensuring proper organization and presentation of information on our website.

Tailwind CSS:

Tailwind CSS was employed to style our web pages. As a utility-first CSS framework, Tailwind allowed us to apply pre-defined classes directly within our HTML, enabling rapid and consistent design across the website. This approach facilitated efficient customization and helped maintain a cohesive visual aesthetic throughout the project.

Laravel Framework:

In this project, we utilized the Laravel framework for web application development. Laravel, a PHP-based framework, provided an elegant syntax and a wide range of built-in features, simplifying common tasks such as routing, sessions, and authentication. Laravel's integration with Blade templating allowed us to seamlessly generate dynamic content and create a more interactive and personalized user experience.

MySQL:

To manage our project's data efficiently, we utilized MySQL, an open-source relational database management system. MySQL was used to store, retrieve, modify, and manage large amounts of information in a structured manner. It allowed us to perform various database operations like adding, removing, and updating data, ensuring the smooth functioning of our website.

Visual Studio Code:

Visual Studio Code served as our primary source-code editor throughout the project. We used it to write and edit our HTML, Tailwind CSS, Laravel, and JavaScript code. Its

features, such as syntax highlighting, intelligent code completion, and debugging capabilities, helped streamline our coding process and ensure code accuracy.

JavaScript (JS):

JavaScript played a crucial role in our project by enabling client-side validation and providing interactive features on our web pages. We utilized JavaScript to validate user input, perform calculations, manipulate webpage elements dynamically, and enhance user interactivity. It enriched the overall user experience of our website.

4.1.2. Implementation details of modules

Signup Module

By providing necessary details like a name, email address, and password on a registration form, users can create accounts using the sign-up module. Input is verified, the email address is checked for uniqueness, and if all goes well, a new user account is created. The admin reviews and approves the user's registration request when the registration process is complete. They can then use their registered email address and password to log in to the system, giving them access to their account and all of the features.

Login Module

The login module facilitates user access to their accounts within the system. Users provide their registered email address and password, which are validated against stored user information. Upon successful authentication, a session is established, allowing users to interact with their accounts and access personalized features. In case of authentication failures, appropriate error messages are displayed.

Logout Module

The logout module enables users to securely end their session and log out from their accounts within the system. When users initiate the logout process, the system terminates the session associated with their account, effectively revoking their access to system functionalities.

Add categories Module

The add categories module lets administrators create and manage different categories for books in the system. They can give each category a name and additional details if needed. This helps organize books and makes it easier for users to find what they're looking for. By adding new categories, administrators can keep the system organized and user-friendly, improving the overall experience for everyone using it.

Delete Module

The delete module enables users to delete their uploaded books, while administrators have the authority to delete users in cases of irrelevance or misconduct. Within the module, users can choose to remove books they have posted for sale or any other purposes. This functionality allows users to manage their content and maintain control over their contributions to the system. Additionally, administrators possess the power to delete user accounts in situations where the user's actions or behavior go against the system's policies or standards. This feature enables administrators to maintain a safe and relevant user community within the system

Update Module

In the update module, users can modify the information on the books they have uploaded for sale. This functionality allows users to make changes to the descriptions, prices, or any other relevant details of their listed books. By having the ability to update their uploaded book information, users can ensure the accuracy and relevance of their listings, making it easier for potential buyers to find and evaluate the books.

Search Module

The search module is designed to assist users in finding specific books or relevant information within the system. Users can input their search queries or keywords into a search bar. The search module then processes these inputs and retrieves matching results from the system's database. The search module aims to enhance the user experience by providing an efficient and intuitive way to navigate through the vast collection of books within the system.

Edit Profile Module

The edit profile module allows users to modify and update their personal information within the system. Users can access their profile settings and make changes to details such as their name, contact information, profile picture, or any other relevant information. This module provides a user-friendly interface where users can edit their profile information easily. It ensures that users can keep their profile up to date, reflecting accurate and current information. By utilizing the edit profile module, users can customize and manage their details to align with their preferences and needs within the system.

Recommendation Module

The recommendation module suggests books to users based on their interests. It uses a method called bag-of-words cosine similarity to find books that are similar to the ones a user has view. The system looks at the title, author, categories and subcategories of books

and compares them to what the user prefers. It then shows a list of books that closely match the user's tastes. This feature helps users discover books they might like and improves their overall experience on the platform

4.2. Testing

4.2.1. Test Cases for Unit Testing

Table 4.1 Test Case_1 Registration form

Project Name: Online Book Selling and Buying Platform						
Test Case						
Test Case ID: TC_1			Test Designed by: Binayak Basyal			
Test Priority (Low/Medium/High): High			Test Designed date: 2024-08-18			
Module Name: Signup Form			Test Executed by: Binayak Basyal			
Test Title: Register new user into the system			Test Execution date: 2024-08-24			
Description: Test the Online Book Selling and Buying Platform Register or Signup page						
Pre-conditions: The user should provide all necessary details while register						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Note
1	Navigate to the registration page		The registration page should open	The user is navigated to the registration page	Pass	

				i.e. as expected		
2	Provide all the required information	First Name=Anjana Last Name=Shakya Phone No=9845246125 Address=Dallu Email=anjanashakya1@gmail.com Password=#Anjana1234 Birthday=10-01-2002	The information should be entered	As expected	Pass	
3	Click on the signup button		The user should be registered into the system	The user is registered as expected	Pass	
Post Conditions: The user's information is validated successfully into the online bookstore system.						

Table. Test Case_2 Login Form

Table 4.2 Test Case_2 Login Form

Project Name: Online Book Selling and Buying Platform						
Test Case						
Test Case ID: TC_2			Test Designed by: Binayak Basyal			
Test Priority (Low/Medium/High): High			Test Designed date: 2024-08-18			
Module Name: Login			Test Executed by: Binayak Basyal			
Test Title: To verify login with a valid email address and password			Test Execution date: 2024-08-24			
Description: Test the Online Book Selling and Buying Platform's Login Page						
Pre-conditions: The user must have a valid email address and password registered in the system						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Note

1	Proceed to the login page		The login page should open	The user proceeds to the login page	Pass	
2	Input valid username	Email: anjanashakya @1gmail.com	The email can be entered	As expected	Pass	
3	Input valid password	password: #Anjana1234	The password can be entered	As expected	Pass	
4	Click on the login button		The user should be able to login into the system	As expected	Pass	
Post Conditions: Users are validated with the database and successfully logged into the online bookstore system.						

Table. Test Case_3 Search Book

Table 4.3 Test Case_3 Search Book

Project Name: Online Book Selling and Buying Platform						
Test Case						
Test Case ID: TC_3			Test Designed by: Binayak Basyal			
Test Priority (Low/Medium/High): High			Test Designed date: 2024-08-18			
Module Name: Search			Test Executed by: Binayak Basyal			
Test Title: Book request or search process			Test Execution date: 2024-08-24			
Description: Users can easily find out books through search engines.						
Pre-conditions: The book's information should be available in the system						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Note

1	Click on the search engine and then type the book name or single letter you want to find.	search=a	A related book should be displayed	As expected	Pass	

Table. Test Case_4 Admin Dashboard Panel

Table 4.4 Test Case_4 Admin Dashboard Panel

Project Name: Online Book Selling and Buying Platform						
Test Case						
Test Case ID: TC_4			Test Designed by: Binayak Basyal			
Test Priority: High			Test Designed date: 2024-08-18			
Module Name: Admin's function			Test Executed by: Binayak Basyal			
Test Title: Add categories, Delete Users and Books, Logout			Test Execution date: 2024-08-24			
Description: Add book categories as well as sub and sub subcategories similarly delete selected user and book data and exit from the dashboard.						
Pre-conditions: User and Book information should be available in the system.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Note
1	Click on manage categories and then click add to add categories as well as sub-categories and sub	Categories=Educational Subcategories=Bachelor's level Sub subcategories= BCA	Added Category should be displayed	As expected,	Pass	

	subcategories					
2	Click on manage product and then click delete to delete the selected book		Book detail should be deleted from the database	As expected, the book is deleted	Pass	
3	Click on manage user and then click delete to delete the selected user		Delete selected user detail from the database	As expected, delete successfully	Pass	
4	Click on the logout button		Direct to index page	As expected	Pass	
Post Conditions: Admin able to add category and delete user's account as well as the uploaded book.						

Table. Test Case_5 User's profile

Table 4.5 Test Case_5 User's Profile

Project Name: Online Book Selling and Buying Platform	
Test Case	
Test Case ID: TC_5	Test Designed by: Binayak Basyal
Test Priority (Low/Medium/High): High	Test Designed date: 2024-08-18
Module Name: User's Profile	Test Executed by: Binayak Basyal
Test Title: Edit the information	Test Execution date: 2024-08-24
Description: Test if the student can edit their information	
Pre-conditions: User's information should be available in the system	

Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Note
1	Click on Profile		The dropdown option should be open	As expected	Pass	
2	Click on edit profile		The user should be directed to edit the profile page	As expected, a page is open	Pass	
3	Input the information and click on update	lname=Shrestha	The information should be updated	As expected, the information is updated	Pass	

Table. Test Case_6 Update and Delete

Table 4.6 Test Case_6 Update and Delete

Project Name: Online Book Selling and Buying Platform						
Test Case						
Test Case ID: TC_6			Test Designed by: Binayak Basyal			
Test Priority (Low/Medium/High): High			Test Designed date: 2024-08-18			
Module Name: Update Delete			Test Executed by: Binayak Basyal			
Test Title: Update and delete book info			Test Execution date: 2024-08-24			
Description: Users can update book detail as well as it can delete it						
Pre-conditions: The book's information should be available in the system						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Note

1	Click on update book and then fill in the field, want to update and click update to update the book	Book price = 350	Updated book detail should be shown in the database	As expected	Pass	
2	Click on delete book and then click ok to delete book		Selected books should be deleted	As expected, the book is deleted	Pass	

Table. Test Case_7 Recommendation

Table 4.7 Test Case_7 Recommendation

Project Name: Online Book Selling and Buying Platform					
Test Case 7					
Test Case ID: TC_8		Test Designed by: Binayak Basyal			
Module Name: Recommendation		Test Executed by: Binayak Basyal			
Description: Testing the recommendation algorithm of Online Book Selling and Buying Platform					
Additional Information: This module can be viewed and used by everyone who is accessing the system.					
SN	Test Case Description	Step	Expected Result	Actual Result	Status
1	Getting recommendation	Viewing single books details	Suggestion of similar books	Random books suggested	Failed
2	Getting recommendation after fixing return statement in view code.	Viewing single books details	Suggestion of similar books	Suggestion of similar books	Pass

4.2.2. Test Cases for System Testing

Table 4.8 Test Case for Book Selling and Buying platform

Project Name: Online Book Selling and Buying Platform						
Test Case 8						
Test Case ID: TC_09			Test Designed by: Binayak Basyal			
Test Priority (Low/Medium/High): Medium			Test Designed date: 09-26-2024			
Module Name: Online Book Selling and Buying Platform			Test Executed by: Binayak Basyal			
Test Title: Testing all component of Online Book Selling and Buying Platform			Test Execution date: 09-26-2024			
Description: Testing complete system by integrate model together						
Pre-conditions: user should navigate to all model by providing required information.						
Dependencies:						
Steps	**Test Steps**	**Test Data**	**Expected Result**	**Actual Result**	**Status (Pass/Fail)**	**Notes**
1	Navigate to Online Book Selling and Buying Platform index page		A system index page should be displayed	As expected, the page is opened	pass	
2	Navigate to register page		A system should display register page when click on register	As expected, register page is shown	pass	
3	Enter valid Data	First Name: Binayak Last Name: Basyal Email=binayak@gmail.com Password=Binayak@12	Data are valid and found	As Expected, user registered data send	pass	

		3 phone:98414069410 dob:01/17/2000	correct	to admin for verification.		
4	Enter email and password of admin	Email=bsl.binayal@gmail.com Password=Binayak8398	Email and Password are valid and accurate	As Expected, redirected to admin dashboard	pass	
5	Admin goes to user verification page & approve user		User should verify.	As Expected, user is approved for system	pass	
6	Enter valid email and password of user	Email=binayak@gmail.com Password=Binayak@123	Email and Password are valid and accurate	As Expected, user is redirect to home page	pass	
7	Navigate to add products page		A product add form should be displayed	As expected, the form is opened	pass	
8	Enter the data's and click submit	ISBN: 111111111111 Title: C Programming Price:1200000 Publication: Asmita Author: Jagrit Condition; Used Quantity: 2 Category:Programming Subcategory: Subsubcategory: Picture: c.jpg	Book should be added to the list.	As expected,	pass	
9	Navigate to products page		A product shows product	As expected, the pages are opened	pass	

			page and list of Books.			
9	Navigate to selected Book		Page shows the details of the book and its owner	As expected, the pages are opened	pass	
10	Recommended Books	Select and open book. book: C Programming	Page shows the details of selected books and shows 5 books similar to that selected book	As expected, similar books are recommended	pass	
Post-conditions: **All modules are working well when we pass correct and validated data.**						

Chapter 5 CONCLUSION AND FUTURE RECOMMENDATIONS

5.1. Lesson Learnt

During the development of an online book selling and buying platform, many important lessons were learned that contributed to growth as a developer. One key lesson was the importance of careful project planning. Clear goals were set and the scope was defined early on, allowing the work to be better organized and problems to be avoided later. Working with the Laravel framework led to a deeper understanding of how web applications are built, while coding skills were enhanced in the process. A strong focus on user experience was also emphasized. Feedback from users was collected to create a more user-friendly design. Several challenges were faced that provided experience in debugging, and solutions were actively sought online. Collaboration with others highlighted the importance of clear communication, and maintaining good documentation ensured that everyone stayed aligned. Effective time management was found to be essential for meeting deadlines and preventing burnout. Overall, these lessons will serve as a guide for future projects and contribute to further development as a better developer.

5.2. Conclusion

In conclusion, the development of the online book selling and buying platform was a rewarding and educational journey. This project allowed technical skills in Laravel, PHP, and frontend technologies to be applied and enhanced, while a deeper understanding of web development best practices was gained. Essential features such as user authentication, book listings, and a recommendation system were successfully implemented, contributing to a seamless user experience.

5.3. Future Recommendation

In the future, there are many ways to improve the online book selling and buying platform. One important step is to add better search features that allow users to filter books by price, condition, and ratings, making it easier for them to find what they want. Also, adding secure payment options will help users buy and sell books directly on the platform, making the process more convenient. To make the platform more engaging, we could introduce community features like forums where users can discuss books and share recommendations. It’s also crucial to ensure the website works well on mobile devices so that users can easily access it from their smartphones.

Additionally, we can use new technologies like Natural Language Processing (NLP) to improve the recommendation system. By analyzing user preferences and behaviors, we can suggest books that are more suited to each individual's reading habits. Implementing machine learning algorithms can make these recommendations even better. Improving the admin dashboard to provide clearer insights into user activity and sales will help in making smart decisions for future updates. Regular maintenance is necessary to keep the platform secure and running smoothly. Finally, creating a marketing plan will help attract more users and ensure the platform's long-term success in the online book market.

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APPENDICES

Implementation Code:

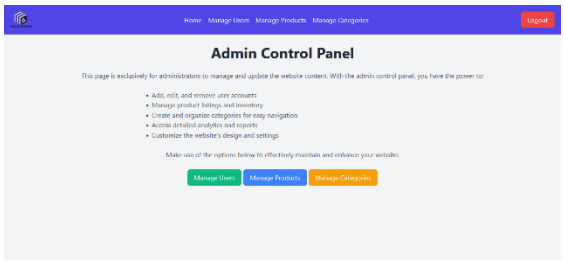
```
public function show($id)
{
   $book = Book::findOrFail($id); // Fetch the book by ID
   $categories = Category::all(); // Fetch all categories
   $subcategories = Subcategory::all(); // Fetch all subcategories
   $subsubcategories = Subsubcategory::all(); // Fetch all subsubcategories
   return view('books.show', compact('book', 'categories', 'subcategories', 'subsubcategories')); // Pass variables to the view
}
public function showd($id)
{
   // Retrieve the book with its related owner, category, subcategory, and subsubcategory
   $book = Book::with('owner', 'category', 'subcategory', 'subsubcategory')->findOrFail($id);
   // Combine features: category_name, subcategory_name, subsubcategory_name, book_author, book_name
   $bookFeatures = strtolower(
      ($book->category->category_name ?? '') . ' ' .
      ($book->subcategory->subcategory_name ?? '') . ' ' .
      ($book->subsubcategory->subsubcategory_name ?? '') . ' ' .
      $book->book_author . ' ' .
      $book->book_name
   );
   // Fetch all books to compare
   $allBooks = Book::with('category', 'subcategory', 'subsubcategory')->get();
   // Store similarity scores
   $similarBooks = [];
   foreach ($allBooks as $otherBook) {
      // Skip if it's the same book
      if ($otherBook->id == $book->id) {
         continue;       }
```

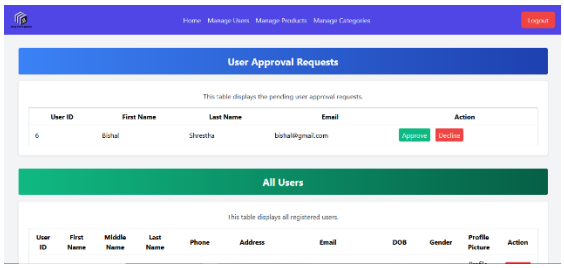
```
        // Combine features for the other book, including category_name, subcategory_name, and subsubcategory_name
        $otherBookFeatures = strtolower(
            ($otherBook->category->category_name ?? '') . ' ' .
            ($otherBook->subcategory->subcategory_name ?? '') . ' ' .
            ($otherBook->subsubcategory->subsubcategory_name ?? '') . ' ' .
            $otherBook->book_author . ' ' .
            $otherBook->book_name
        );
        // Calculate cosine similarity
        $similarity = $this->calculateCosineSimilarity($bookFeatures, $otherBookFeatures);
        // Store the book and its similarity score
        $similarBooks[] = [
            'book' => $otherBook,
            'similarity' => $similarity,
        ];
    }
    // Sort by similarity score in descending order
    usort($similarBooks, function ($a, $b) {
        return $b['similarity'] <=> $a['similarity'];
    });
    // Pass the top similar books (e.g., top 5) to the view
    $recommendedBooks = array_slice($similarBooks, 0, 5);
    return view('bookdetails', compact('book', 'recommendedBooks'));
}
private function calculateCosineSimilarity($string1, $string2)
{
    // Full list of NLTK English stop words
    $stopWords = [
        'i', 'me', 'my', 'myself', 'we', 'our', 'ours', 'ourselves', 'you', 'your', 'yours',
        'yourself', 'yourselves', 'he', 'him', 'his', 'himself', 'she', 'her', 'hers', 'herself',
        'it', 'its', 'itself', 'they', 'them', 'their', 'theirs', 'themselves', 'what', 'which',
        'who', 'whom', 'this', 'that', 'these', 'those', 'am', 'is', 'are', 'was', 'were', 'be',
        'been', 'being', 'have', 'has', 'had', 'having', 'do', 'does', 'did', 'doing', 'a', 'an',
```

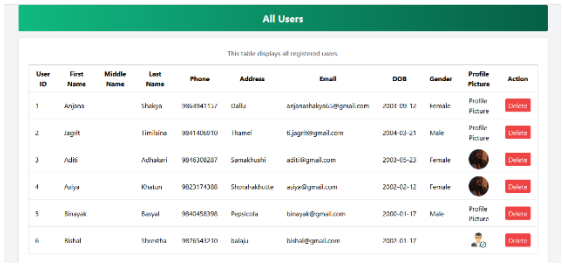
```
        'the', 'and', 'but', 'if', 'or', 'because', 'as', 'until', 'while', 'of', 'at', 'by', 'for',
        'with', 'about', 'against', 'between', 'into', 'through', 'during', 'before', 'after', 'above',
        'below', 'to', 'from', 'up', 'down', 'in', 'out', 'on', 'off', 'over', 'under', 'again',
        'further', 'then', 'once', 'here', 'there', 'when', 'where', 'why', 'how', 'all', 'any', 'both',
        'each', 'few', 'more', 'most', 'other', 'some', 'such', 'no', 'nor', 'not', 'only', 'own', 'same',
        'so', 'than', 'too', 'very', 's', 't', 'can', 'will', 'just', 'don', 'should', 'now'
    ];
    // Tokenize and filter out stop words for each string
    $words1 = array_filter(str_word_count($string1, 1), function ($word) use ($stopWords)
{
        return !in_array($word, $stopWords);
    });
    $words2 = array_filter(str_word_count($string2, 1), function ($word) use ($stopWords)
{
        return !in_array($word, $stopWords);
    });
    // Count word frequencies after filtering stop words
    $words1 = array_count_values($words1);
    $words2 = array_count_values($words2);
    // Combine the two sets of words
    $allWords = array_unique(array_merge(array_keys($words1), array_keys($words2)));
    // Create vectors
    $vec1 = [];
    $vec2 = [];
    foreach ($allWords as $word) {
        $vec1[] = isset($words1[$word]) ? $words1[$word] : 0;
        $vec2[] = isset($words2[$word]) ? $words2[$word] : 0;
    }
    // Calculate dot product and magnitudes
    $dotProduct = array_sum(array_map(function ($v1, $v2) {
        return $v1 * $v2;
    }, $vec1, $vec2));
    $magnitude1 = sqrt(array_sum(array_map(function ($v) {
        return $v * $v;
```

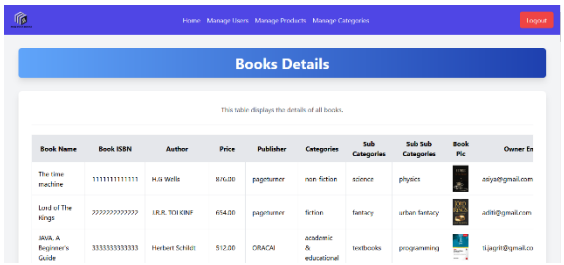
```
    }, $vec1)));
    $magnitude2 = sqrt(array_sum(array_map(function ($v) {
        return $v * $v;
    }, $vec2)));
    // Avoid division by zero
    if ($magnitude1 * $magnitude2 == 0) {
        return 0;
    }
    return $dotProduct / ($magnitude1 * $magnitude2);
}
```

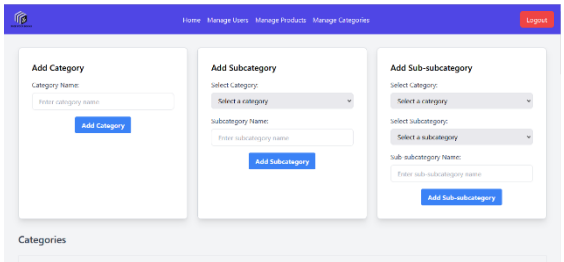
Screenshots of System

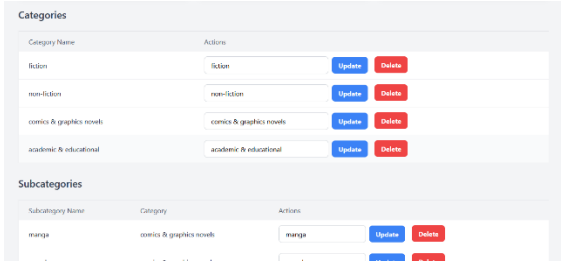


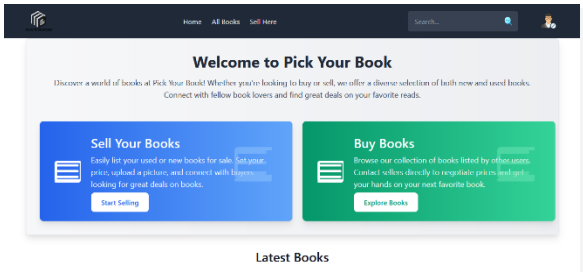


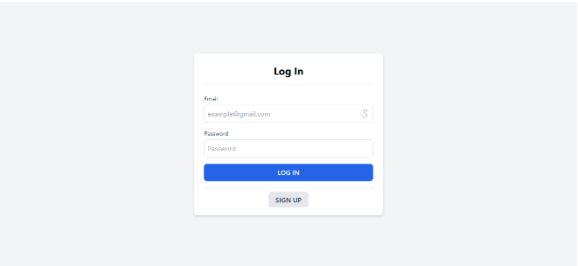


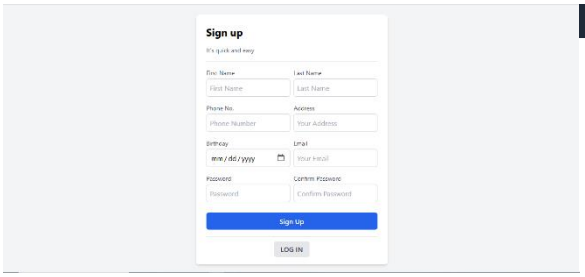


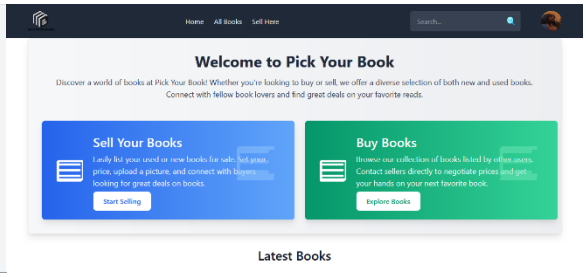




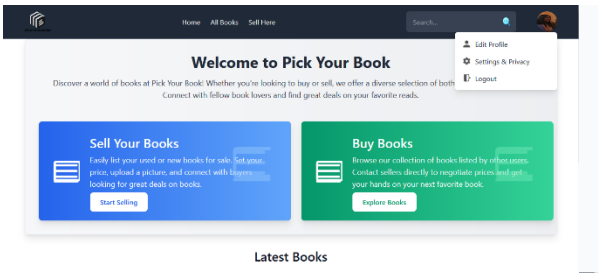








Latest Books



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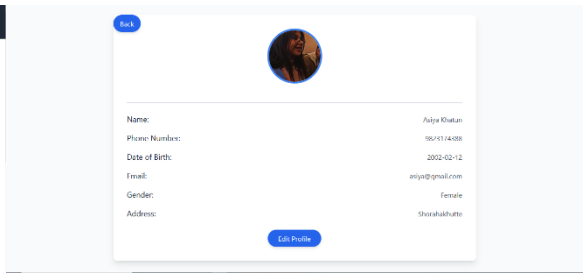

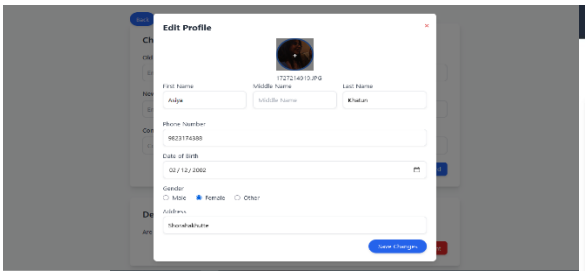

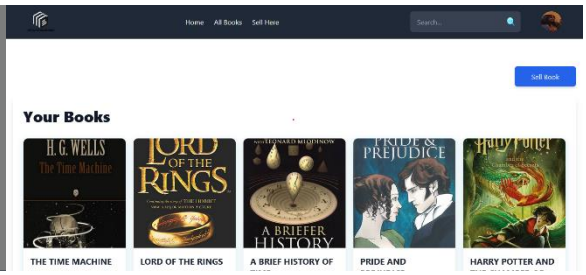

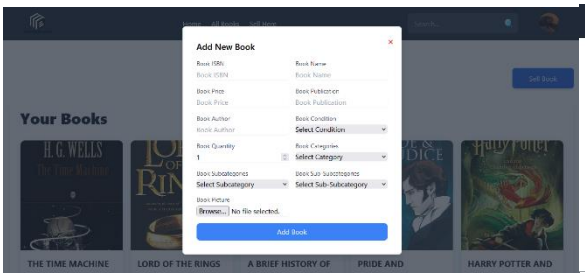

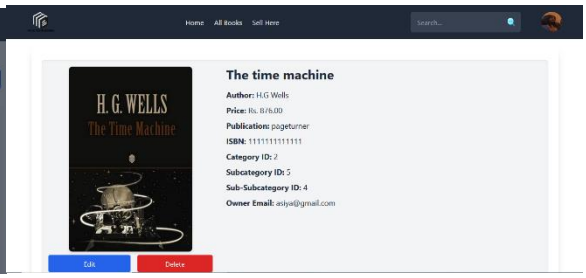

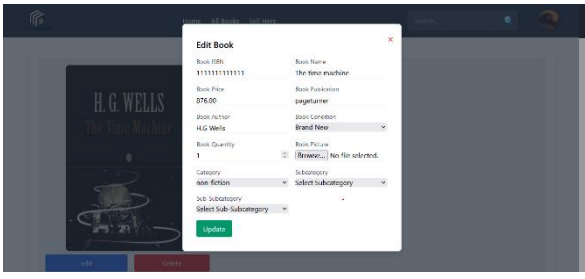

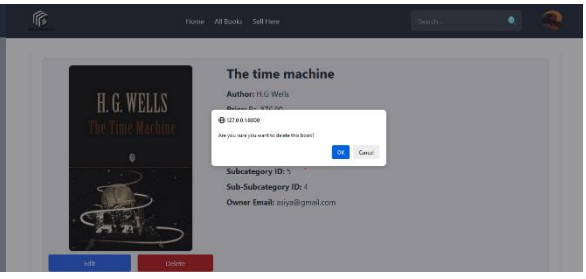

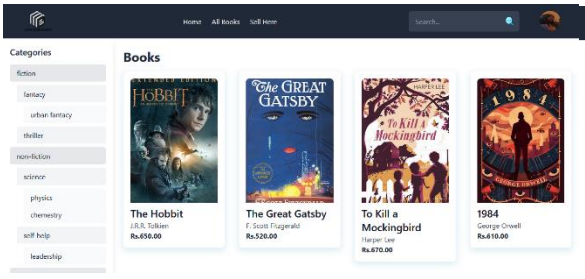

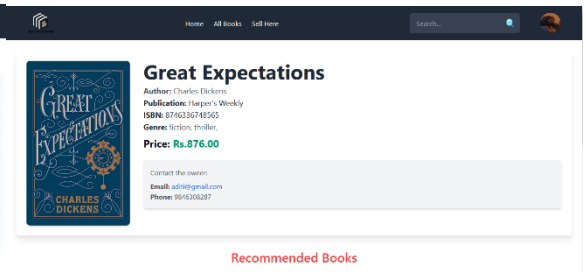


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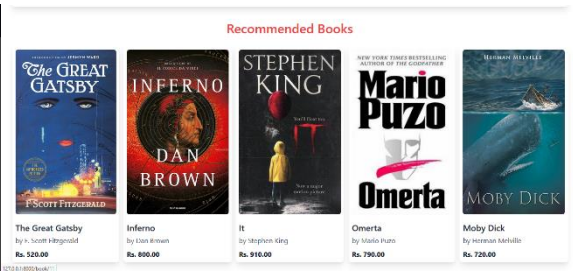
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