A

Mini Project Synopsis on

Rent a Book

Submitted in partial fulfillment of the requirements for the

degree

Second Year Engineering – Computer Science Engineering (Data Science)

by

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CERTIFICATE

This to certify that the Mini Project report on "**Rent a Book**" has been submitted by Shaily Gupta(23107085), Vishal Gupta(23107139), Sakshi Jadhav(23107110), and Mayur Gosavi(23107092) who are a Bonafede students of A. P. Shah Institute of Technology, Thane, Mumbai, as a partial fulfilment of the requirement for the degree in **Computer Science Engineering (Data Science)**, during the academic year **2024-2025** in the satisfactory manner as per the curriculum laid down by University of Mumbai.

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Chapter 1

Introduction

The Online ‘Rent a Book’ aims to provide a user-friendly platform where students and book lovers can rent books conveniently. In today's digital age, the way we access literature has transformed dramatically. Renting books online has emerged as a convenient and cost-effective alternative to traditional purchasing. This approach not only allows readers to enjoy a vast array of titles without the commitment of ownership but also promotes sustainability by reducing the demand for new print copies. Whether for academic needs, leisure reading, or discovering new authors, online book rentals provide flexibility and accessibility, making literature more available than ever

This application allows users to browse a diverse catalog, manage their rentals, and track due dates, all within a user-friendly interface. By leveraging Java's robust programming capabilities and MySQL's efficient database management, the application ensures seamless performance and data integrity. This project not only enhances accessibility to literature but also streamlines the rental process, making it easier for users to enjoy reading without the need for ownership.

Users can browse a catalog of available books, check their availability, and manage their rentals through an intuitive interface. This system streamlines the process of book lending, promoting a culture of sharing and accessibility within the college community.

1.1 Purpose:

The purpose of an online Rent a Book is to provide users with a platform where they can rent books for a specified period without having to purchase them. Some key objectives of such a system include:

Cost-Effective Access: Users can access a wide range of books at a fraction of the cost compared to purchasing, making reading more affordable.

Convenience: Readers can easily browse, search, and rent books online without visiting physical libraries or stores.

Increased Availability: Provides access to a variety of books, including rare or out-of-print editions, that may not be available in local stores or libraries.

Environmentally Friendly: Promotes the reuse of books, reducing the need for printing new copies and helping to minimize waste.

Flexible Reading Options: Allows users to borrow books for different durations, catering to different reading speeds and schedules.

Community Building: Often, such platforms build a reading community where users can exchange reviews and recommendations.

In short, an online Rent a Book makes reading more accessible, economical, and convenient for a broader audience.

1.2 Problem Statement:

Lack of Centralized Book Rental Platform: Currently, there is no centralized, easily accessible platform where users can browse, rent, and manage book rentals online. Most traditional bookstores and libraries rely on physical visits, leading to inconvenience for users seeking a variety of books.

Limited Access to Books: Users face difficulty in accessing books of their choice, especially in remote areas or when certain books are out of stock. There is a need for a system that can provide a wide range of books, including e-books, that can be rented online from anywhere.

Difficulty in Tracking and Managing Rentals: Users and administrators have difficulty tracking the status of rented books, including due dates, availability, and return processes. This creates delays in book availability for other users and potential penalties for late returns.

Lack of Variety in Rental Options: Current book rental options are limited, offering little flexibility in terms of rental periods or types of books (e.g., physical books, e-books, or audiobooks). Users need more variety in terms of rental options and durations.

Security and Payment Challenges: Ensuring the secure processing of payments and protecting user data during online transactions remains a concern. There is a need for secure payment gateways and user authentication.

By addressing these problems, the online renting a book can improve accessibility, efficiency, and user satisfaction in the book rental process.

1.3 Objectives:

The primary goal of this project is to develop a Java-based application that facilitates book rentals, enabling users to search for books by title and author. The application will utilize Java Swing for the user interface and MySQL for database management, ensuring a robust and responsive experience.

User Interface: The main objective of the project is to rent a book based on title and author by using java swing and mySQL.

Payment Integration: This project is to create a application that serves as a central book store at convenient and affordable price, using a library like Paypal java SDK to integrate payment processing.

Database Management: We provide a platform where user or customer can also give books on rent or sell, using mySQL database to store customers and customer's book details.

Data access layer: It will help users to search and filter using library like spring data JPA to interact with database.

1.4 Scope:

Educational Institutions (Schools, Colleges, and Universities): Can be useful to Educational Institutions like Schools, colleges, and universities, they can use Rent a Books to provide students with textbooks or academic materials.

Bookstores and Retailers: Bookstores or Retailers can offer book rental services for people who want to rent books instead of buying them, especially for expensive or rare titles.

Corporate Libraries: Can be use in Corporate libraries, companies with large employee bases can use online ‘Rent a Books’ application for internal knowledge-sharing and training materials.

By defining the scope in these areas, an online book rental system can effectively cater to user needs, streamline operations, and explore opportunities for growth and innovation.

Chapter 2

Proposed System

The proposed online Rent a Book will feature user registration and authentication, allowing members to browse and search for books by title, author, or genre. Users can rent books digitally. A recommendation engine will suggest books based on reading history. Integrated payment gateways will handle rental fees. Admins can manage inventory, add new titles, and oversee user activity.

2.1 Features and Functionality

User Registration and Login: New users can register by providing basic details. Existing users can log in using credentials.

Book Catalog: A searchable and filterable catalog of available books, categorized by genre, author, language.

Book Details: Each book has a detailed page with title, author, synopsis, availability status, and rental cost.

Rental Plans: Users can choose from different rental plans (weekly, monthly, or custom). Pricing adjusts based on duration and book type.

Inventory Management: Add, edit, or remove books from the inventory. Track availability and manage stock levels.

Social Sharing: Options for users to share their favourite books or rentals on social media.

Community Features: Forums or discussion boards for users to engage and share recommendations.

Multi-Language Support: Accommodate a diverse user base by offering multiple language options.

Incorporating these features can create a comprehensive, user-friendly online book rental platform that caters to the needs of both readers and administrators.

Chapter 3

Project outcomes

The outcomes of the project Rent a Book reflect not only the technical success of the project but also its potential impact on the community, user engagement, and overall sustainability in the book rental market. Future enhancements and user feedback will guide continuous improvement and adaptation to evolving needs.

Users can easily browse and rent books from anywhere, anytime, without visiting physical libraries or stores.

The ease of renting encourages more people to read frequently making Higher Reading Rates.

Cost Savings, Renting books reduces the need for purchasing, offering a budget-friendly solution, especially for expensive or one-time-use books.

Also having Environmental Impact, promotes sustainability by reducing paper waste and encouraging use of ebooks.

More users are able to discover and read books they may not have considered before.

Users save money compared to purchasing books, leading to more frequent rentals.

Clear rental pricing structure helps users budget for their reading habits.

Successful implementation can be foundation for growth, can pave the way for future features, such as digital rentals (e-books) or partnerships with publishers.

Renting books can be an opportunities to reach a broader audience or expand into new regions.

These outcomes reflect the overall impact of the online book rental system project, highlighting benefits for users, the organization, and the broader community.

Chapter 4

Software Requirement

These software requirements aim to create a robust, user-friendly, and secure online book rental system that meets the needs of both users and administrators. Proper implementation of these features will enhance the overall functionality and appeal of the platform.

IDE: NetBeans Integrated development environment (IDE) used for developing Java applications. Provides features like code editing, debugging, and project management.

Database: MySQL Open-source relational database management system (RDBMS).MySQL Workbench for database design, querying, and management. MySQL Connector/J: The official JDBC driver for connecting Java applications to MySQL databases.

For Payment:

Frontend: Java Swing: For creating a graphical user interface (GUI) for the payment section. Both libraries are supported within the NetBeans IDE.

Backend: MySQL Schema for Payments:

User Table: Stores user information (user_id, name, email, etc.).

Payment Table: Stores payment transactions (payment_id, user_id, amount, payment method, status, etc.).

Transaction History Table: Keeps a log of all payment transactions

Chapter 5

Project Design

Project design refers to the process of conceptualizing and planning the structure, components, and functionalities of a project to achieve specific objectives. It involves translating the requirements and goals identified during the initial phases (such as requirement analysis) into a detailed blueprint or roadmap for implementation.

It is a visual representation that models the interactions between users admin and a system, describing its functionality and behavior from the user as well as admin perspective.

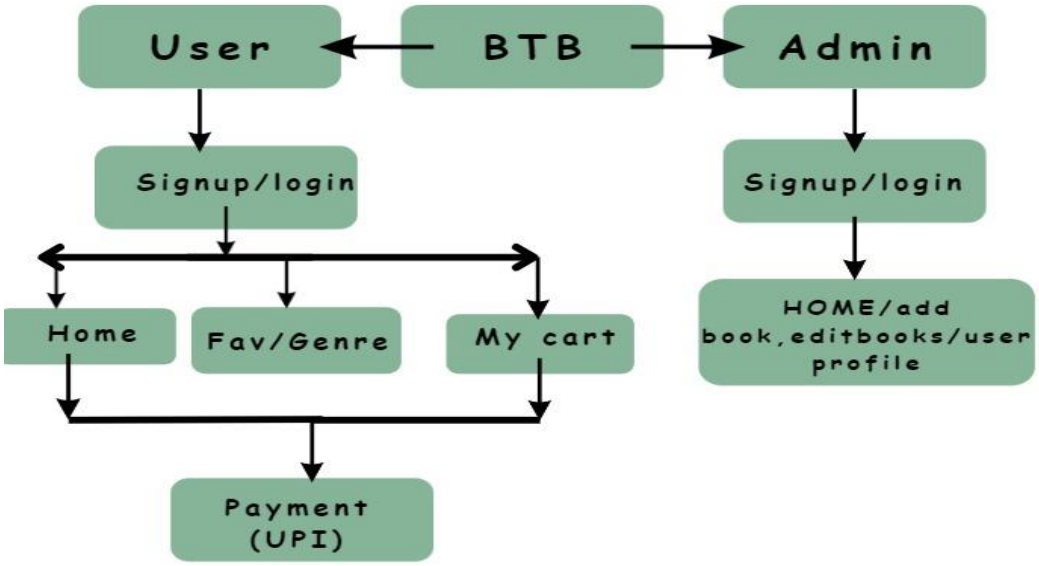


Fig 5.1 Block Diagram

User Side:

Signup/login: Users must sign up or log in to access the system. This could include creating an account or logging in with credentials.

Home: After logging in, users can access the homepage where they might browse featured books, search for books, etc.

Fav/Genre: This section allows users to view books by their favorite genres or authors. It provides personalized content or recommendations.

My Cart: Users can add books to their cart for purchasing later. The cart holds selected items before proceeding to checkout.

Payment (UPI): Users can proceed to make payments through **UPI** (Unified Payments Interface), which is a common digital payment system used in countries like India.

Admin Side:

Signup/login: Similar to users, the admin must also sign up or log in to manage the system.

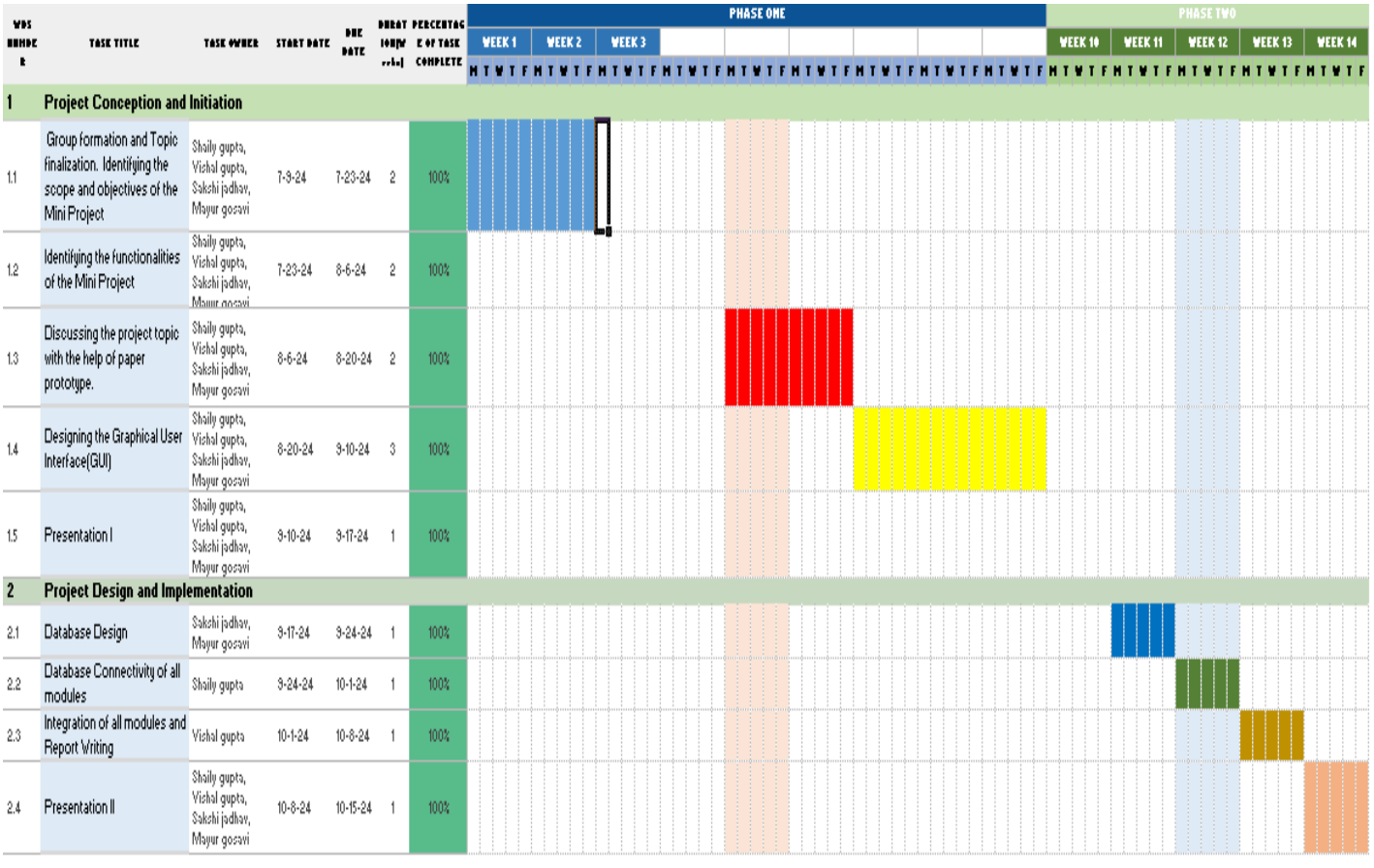
Home/Add Book/Edit Books/User Profile: The admin homepage has options for managing the bookstore:

- **Add Book**: Admin can add new books to the system's catalog.
- **Edit Books**: Admin can edit existing book details, such as updating prices, descriptions, or availability.
- **User Profile**: Admin can view or edit user profiles, potentially managing user accounts.

Chapter 6

Project Scheduling

A schedule outlining planned start and finish dates, durations, and allocated resources for each task, ensuring tasks are completed on time and within budget for effective task and time management.



WBS NUMBER	TASK TITLE	TASK OWNER	START DATE	DUE DATE	DURATION (days)	PERCENTAGE OF TASK COMPLETE
1	**Project Conception and Initiation**					
1.1	Group formation and Topic finalization. Identifying the scope and objectives of the Mini Project	Shaily gupta, Vishal gupta, Sakshi jadhav, Mayur gosavi	7-9-24	7-23-24	2	100%
1.2	Identifying the functionalities of the Mini Project	Shaily gupta, Vishal gupta, Sakshi jadhav, Mayur gosavi	7-23-24	8-6-24	2	100%
1.3	Discussing the project topic with the help of paper prototype.	Shaily gupta, Vishal gupta, Sakshi jadhav, Mayur gosavi	8-6-24	8-20-24	2	100%
1.4	Designing the Graphical User Interface(GUI)	Shaily gupta, Vishal gupta, Sakshi jadhav, Mayur gosavi	8-20-24	9-10-24	3	100%
1.5	Presentation I	Shaily gupta, Vishal gupta, Sakshi jadhav, Mayur gosavi	9-10-24	9-17-24	1	100%
2	**Project Design and Implementation**					
2.1	Database Design	Sakshi jadhav, Mayur gosavi	9-17-24	9-24-24	1	100%
2.2	Database Connectivity of all modules	Shaily gupta	9-24-24	10-1-24	1	100%
2.3	Integration of all modules and Report Writing	Vishal gupta	10-1-24	10-8-24	1	100%
2.4	Presentation II	Shaily gupta, Vishal gupta, Sakshi jadhav, Mayur gosavi	10-8-24	10-15-24	1	100%

Figure 6.1: Gantt Chart

During the project timeline, the group members undertook various tasks to ensure the successful completion of the Mini Project. In the first two weeks of July, Shaily Gupta and Vishal Gupta focused on group formation and topic finalization, identifying the project's scope and objectives. Following this, from the last week of July to the first week of August,

Shaily Gupta and Vishal Gupta identified the key functionalities needed for the Mini Project.

From the second week to the last week of August, a collaborative effort involving Shaily Gupta, Vishal Gupta, Sakshi Jadhav and Mayor Gosavi was made to discuss the project topic, utilizing a paper prototype to visualize ideas. Concurrently, Vishal Gupta and Sakshi Jadhav worked on designing the Graphical User Interface (GUI) during the last week of August to the first week of September, focusing on creating a user-friendly layout.

In the first two weeks of September, the team, including Shaily Gupta, Vishal Gupta, Sakshi Jadhav and Mayor Gosavi, prepared for Presentation I. Shaily Gupta then took the lead from the second week to the last week of September, concentrating on database design, which was crucial for the project's functionality.

By the last week of September, Shaily Gupta completed the database connectivity for all modules, ensuring seamless integration. In the first week of October, Vishal Gupta and Sakshi Jadhav worked together to integrate all project modules and began report writing, while Mayor Gosavi joined them for Presentation II in the same week. This structured approach allowed the team to efficiently collaborate and advance their project systematically.

Chapter 7

Results

Our project **'Rent A Book'** a online Book Rental platform successfully addresses the need for a streamlined book rental process. It provides a robust platform for both users and administrators, enhancing the overall experience of renting books online. Future enhancements may include mobile app development and the addition of e-books for rental.

Functional Testing

Functional testing was conducted to ensure that all features of the Online Book Rental System work as intended.

User Registration and Login:

Test Cases: Successfully created accounts, logged in with valid credentials, and failed login attempts with invalid credentials.

Results: All functional tests passed, confirming that the authentication process is secure and effective.

Admin Panel:

Test Cases: Admins added, updated, and deleted books from the catalogue.

Results: The admin functions worked efficiently, providing full control over the book inventory.

Performance Testing: The system-maintained responsiveness, with response times averaging under 2 seconds, indicating good performance under load.

Database: Tested database query speeds for retrieving book information and processing rentals.

UI Design:

The user interface (UI) for Rent A Book is designed using Java's Swing framework, which provides a responsive and intuitive environment for both students and administrators. For students, the interface is designed to be simple and easy to use, displaying books in a clean format. Administrators are provided with a more detailed interface, enabling them to create and manage books with ease.

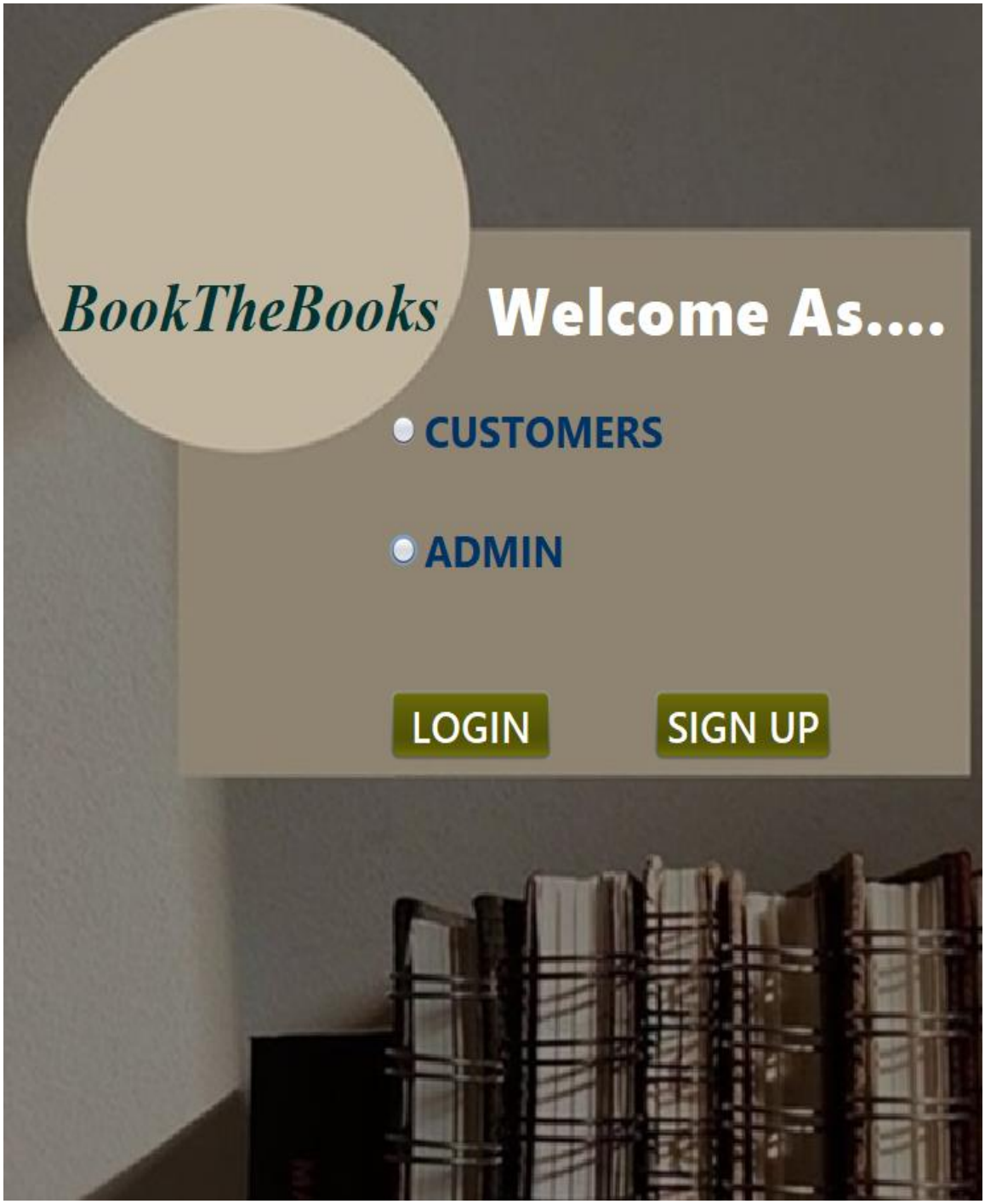


Fig 7.2 welcome page

This is Welcome page welcomes for both Admin and Users

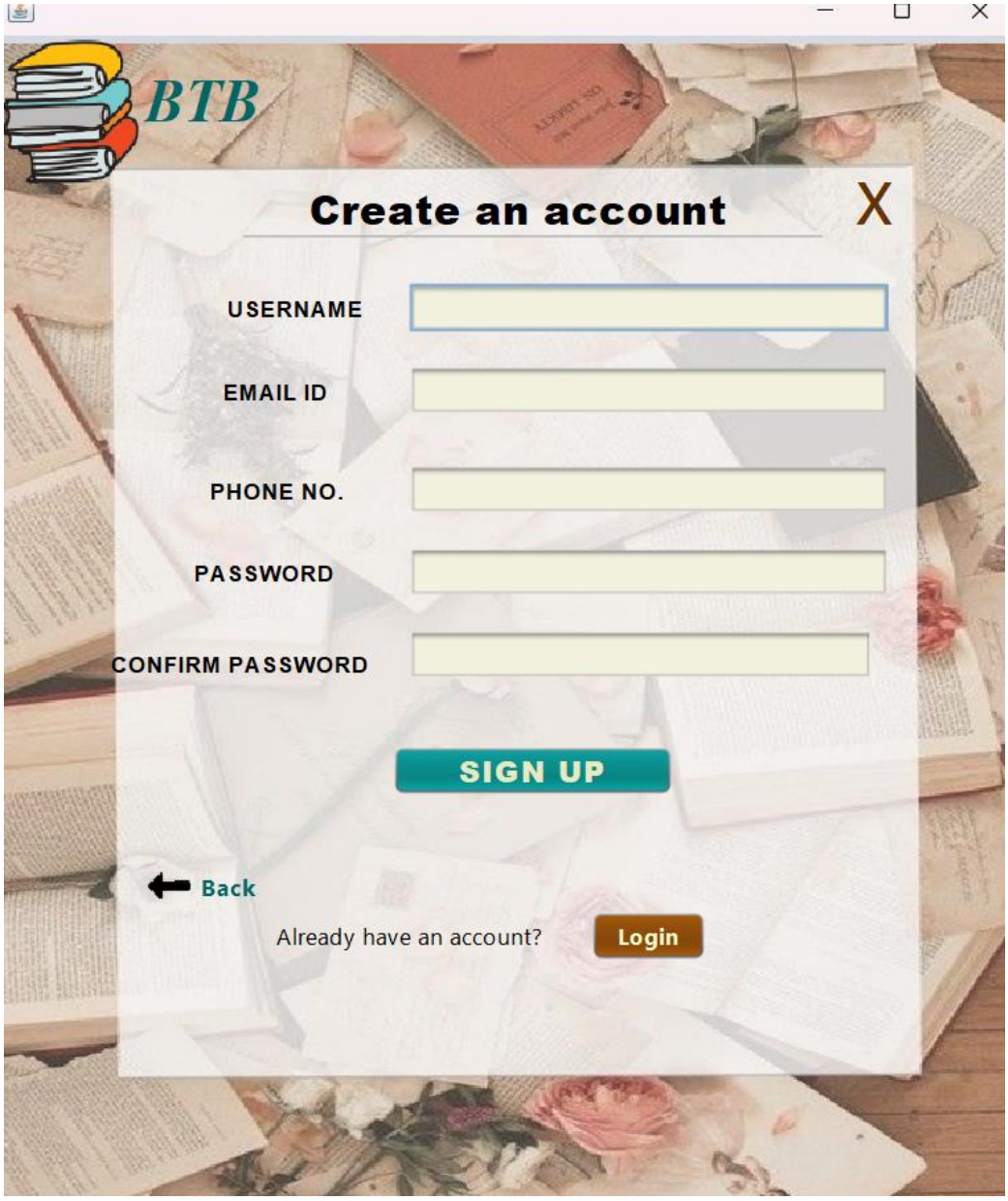


Fig 7.3 SignUp page(admin)

This page is for admin signup where admin can signup with proper validation to enter in BTB

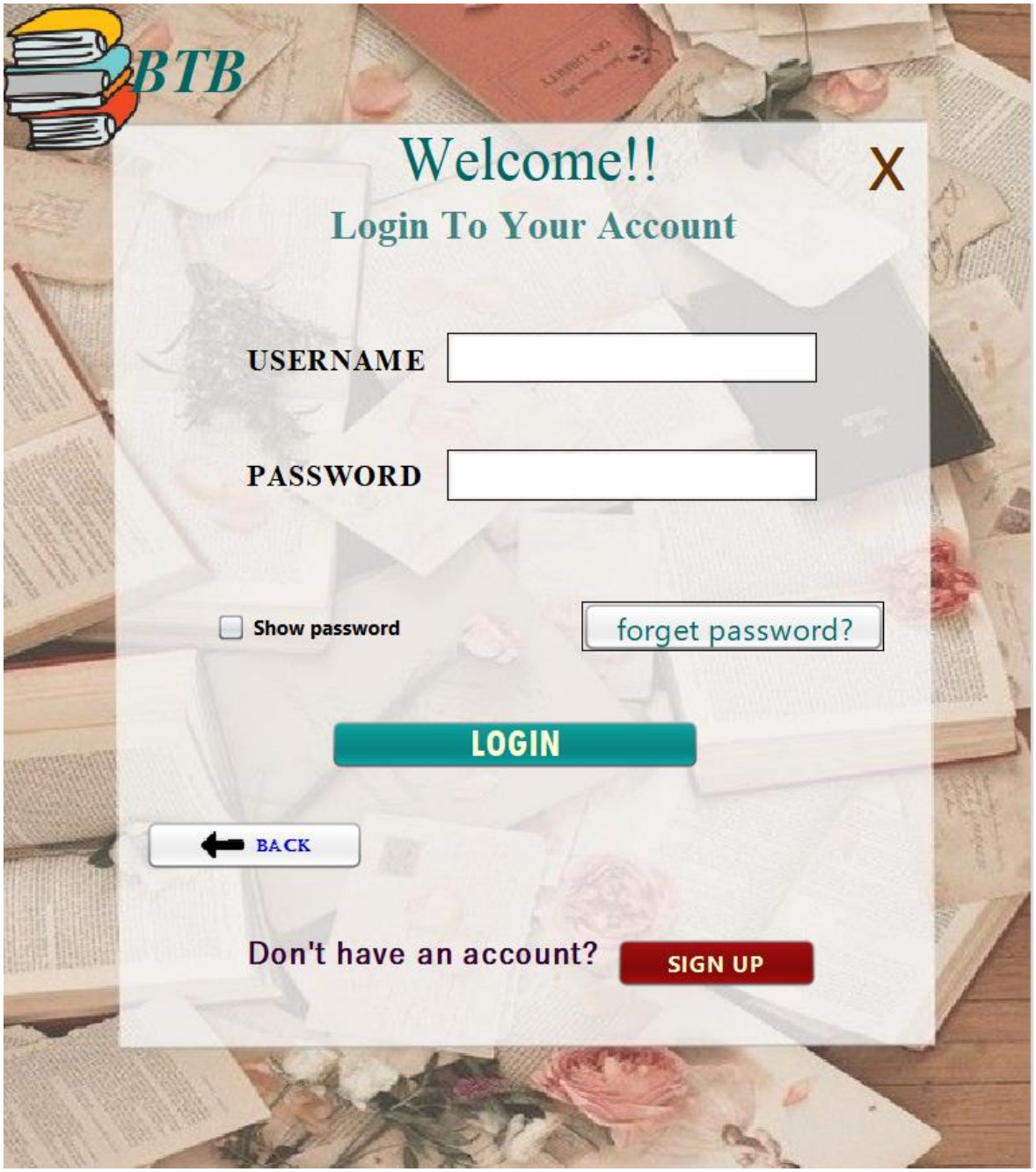


Fig 7.3 Login page(admin)

After signing up the admin had to put same username and password for enter to next page

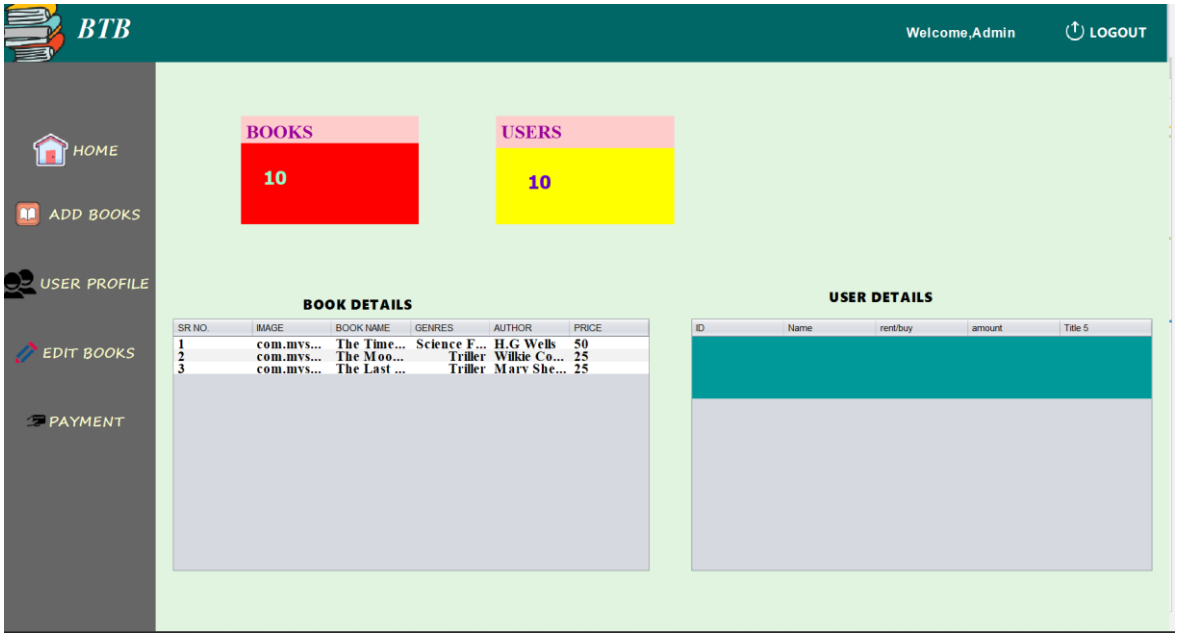


Fig 7.4 Admin home page

This a home page of admin where admin has multiple option i.e add books, user profile, edit books and view payment.

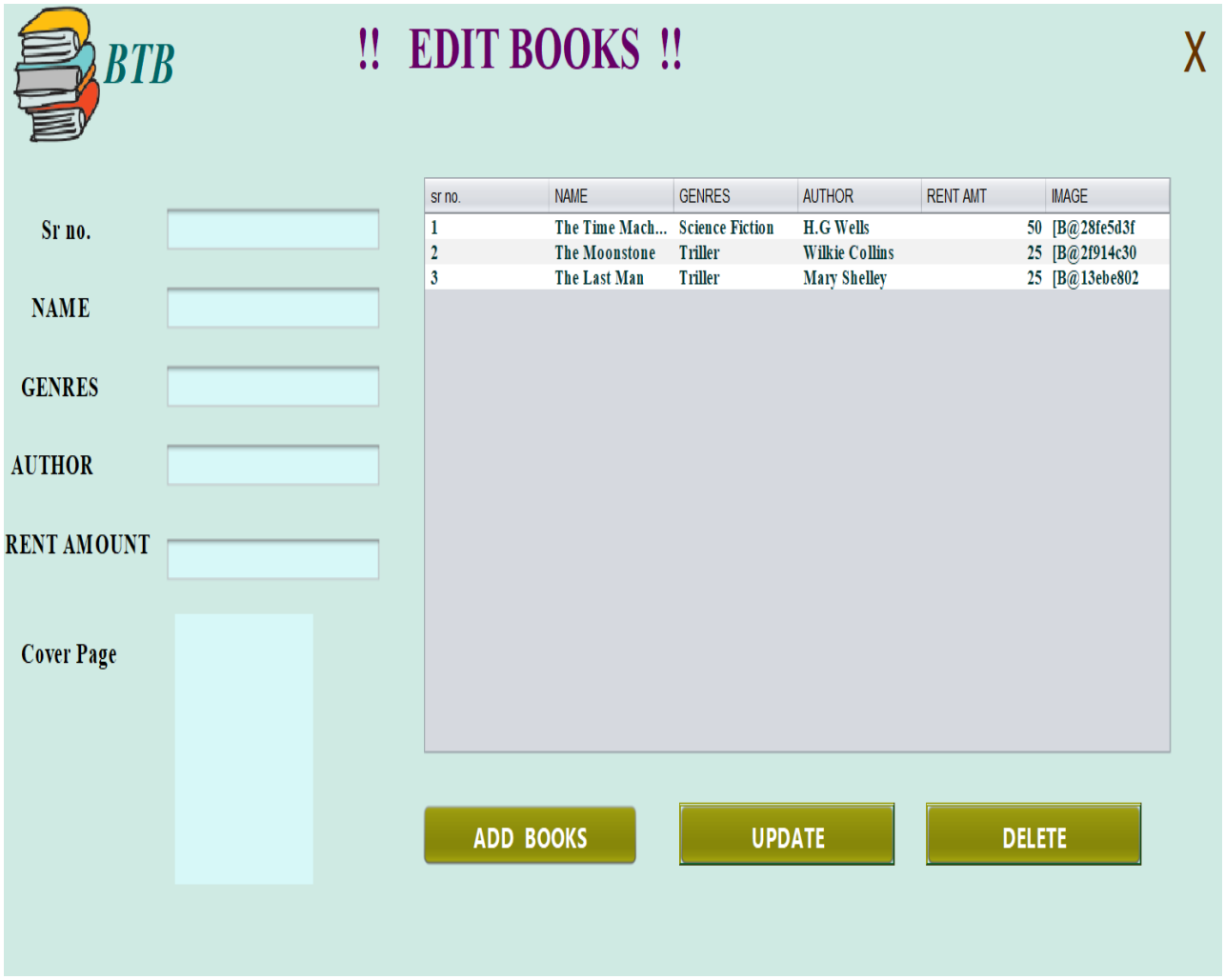


Fig 7.5 Edit books

Here admin can edit the books, which ever books has admin add.

Fig 7.6 Add books

Here admin can add books with proper book name, price genres, author, cover page.

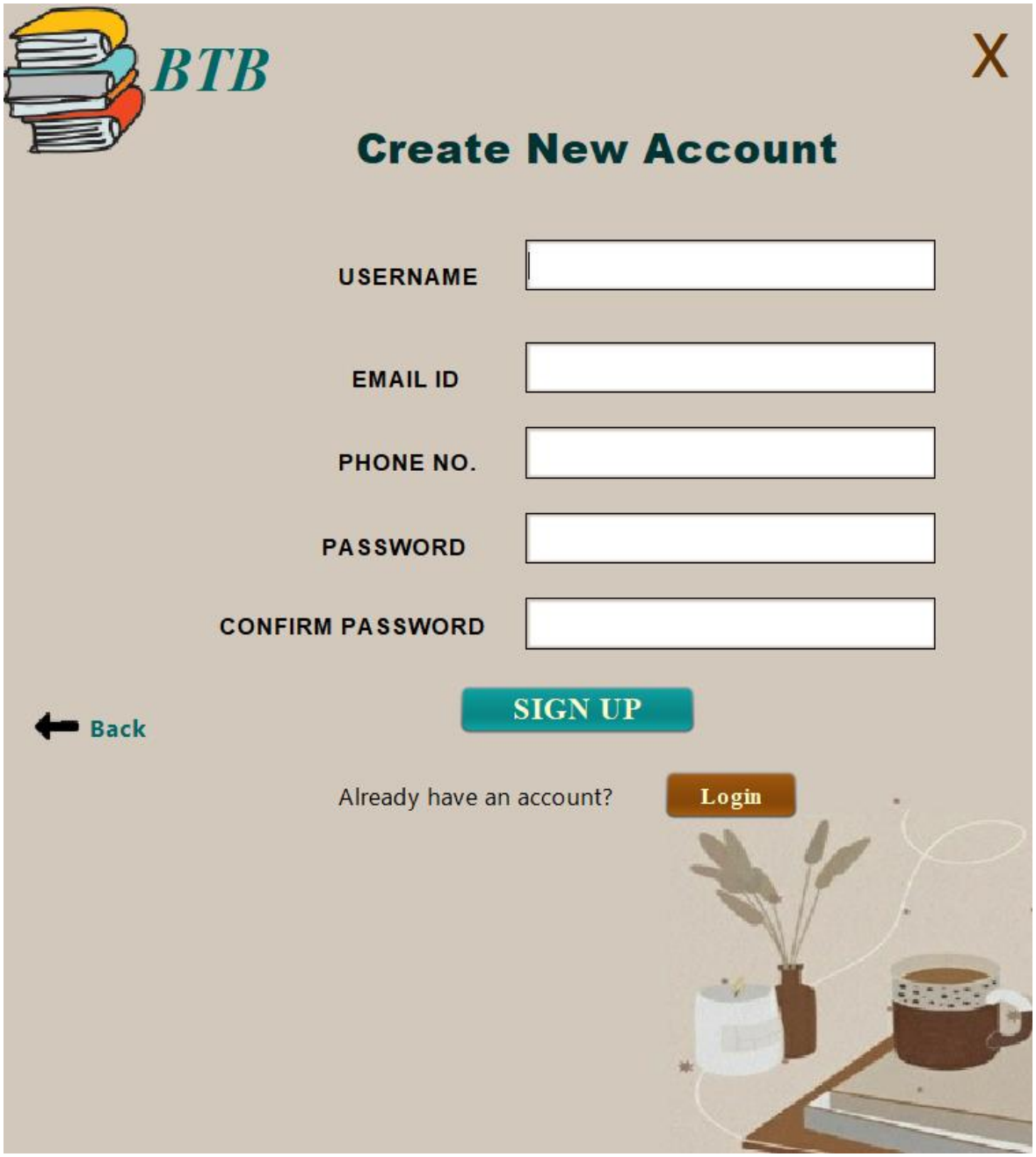


Fig 7.7 SignUp page(user)

This page is for User signup where user can signup with proper validation to enter in BTB.

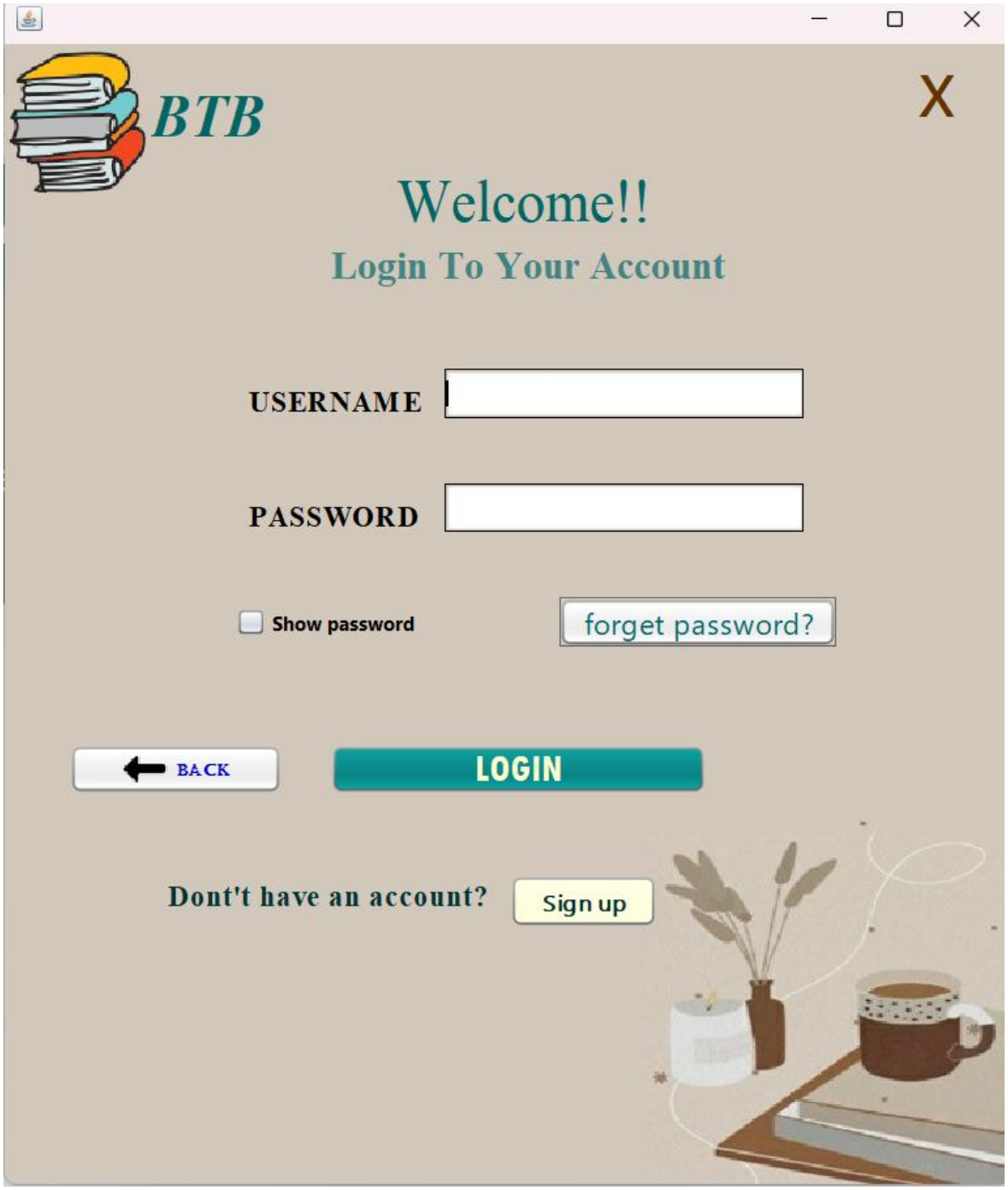


Fig 7.8 Login page(user)

After signing up the user had to put same username and password for enter to next page

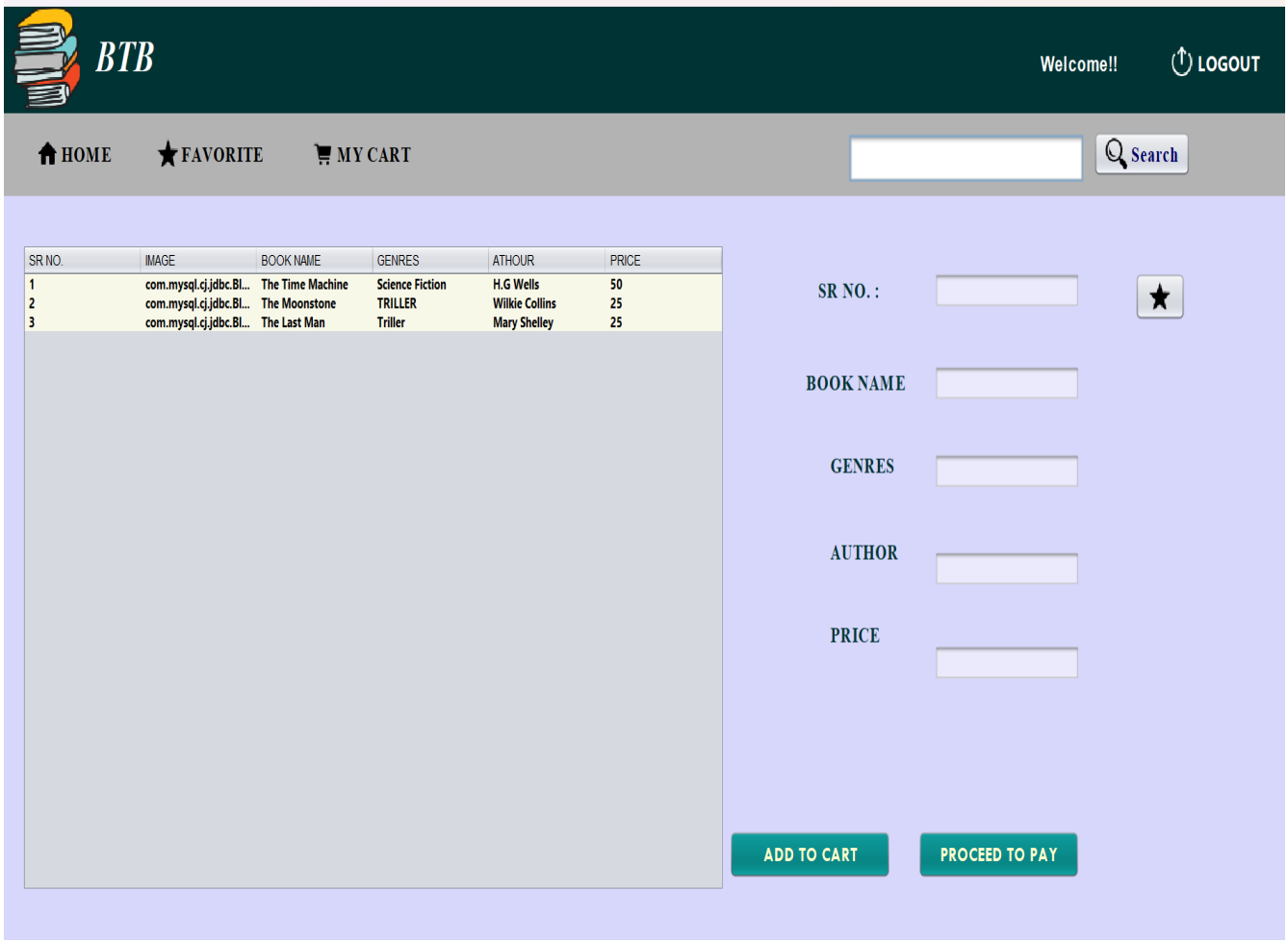


Fig 7.9 Home page(user)

This a home page of user where user can search a book and add that book in cart or favourite.

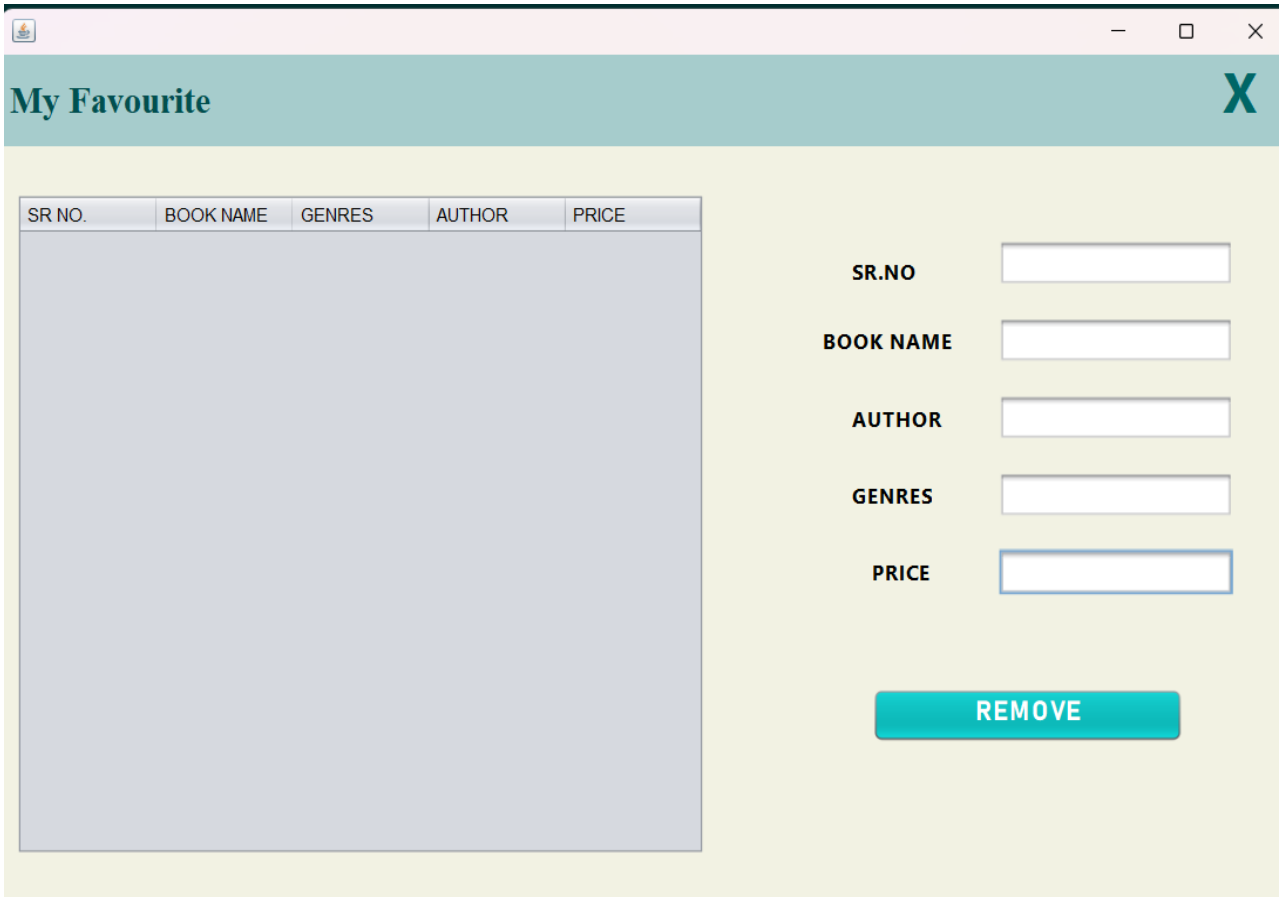


Fig 7.10 Favourite page

Here user can add the books in favourite for further reference and also remove the books from favourite

Fig 7.11 MyCart page

Here user can add the books in mycart for buy the books and also remove the books in the cart.

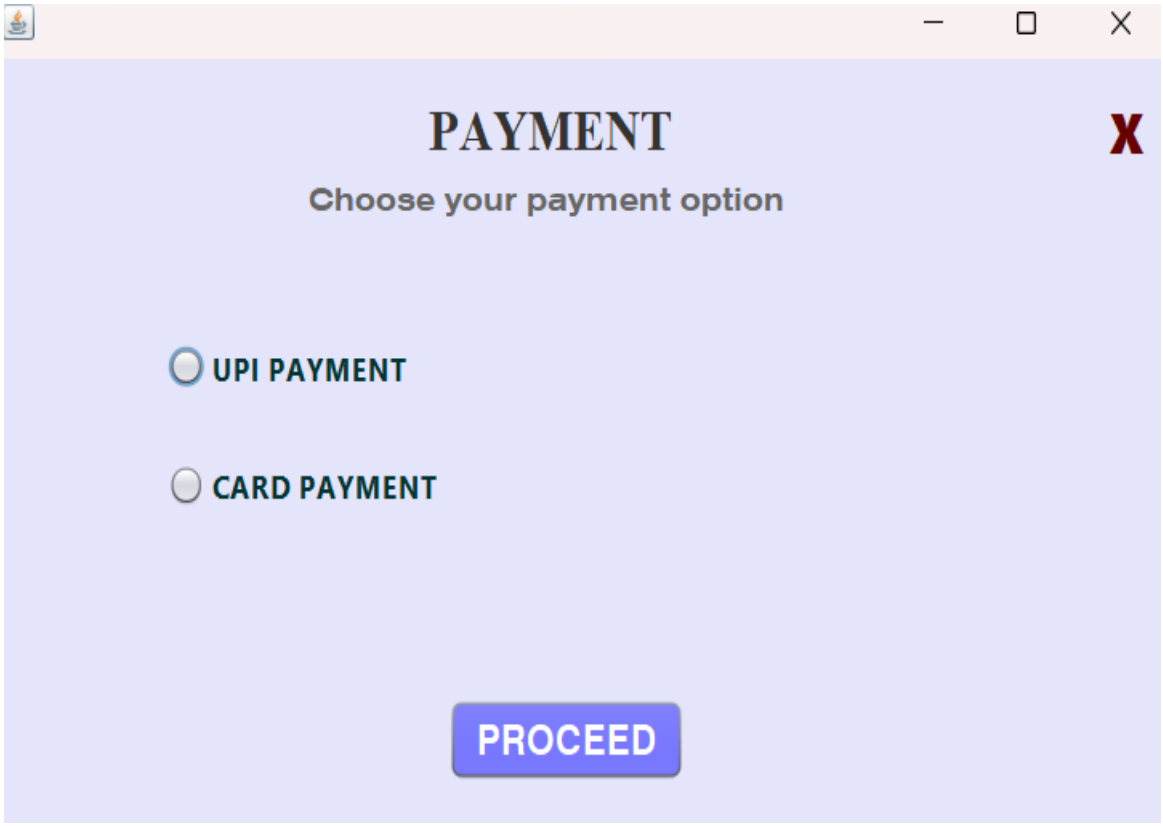


Fig 7.12 Payment page

Here user has payment option upi payment or card payment

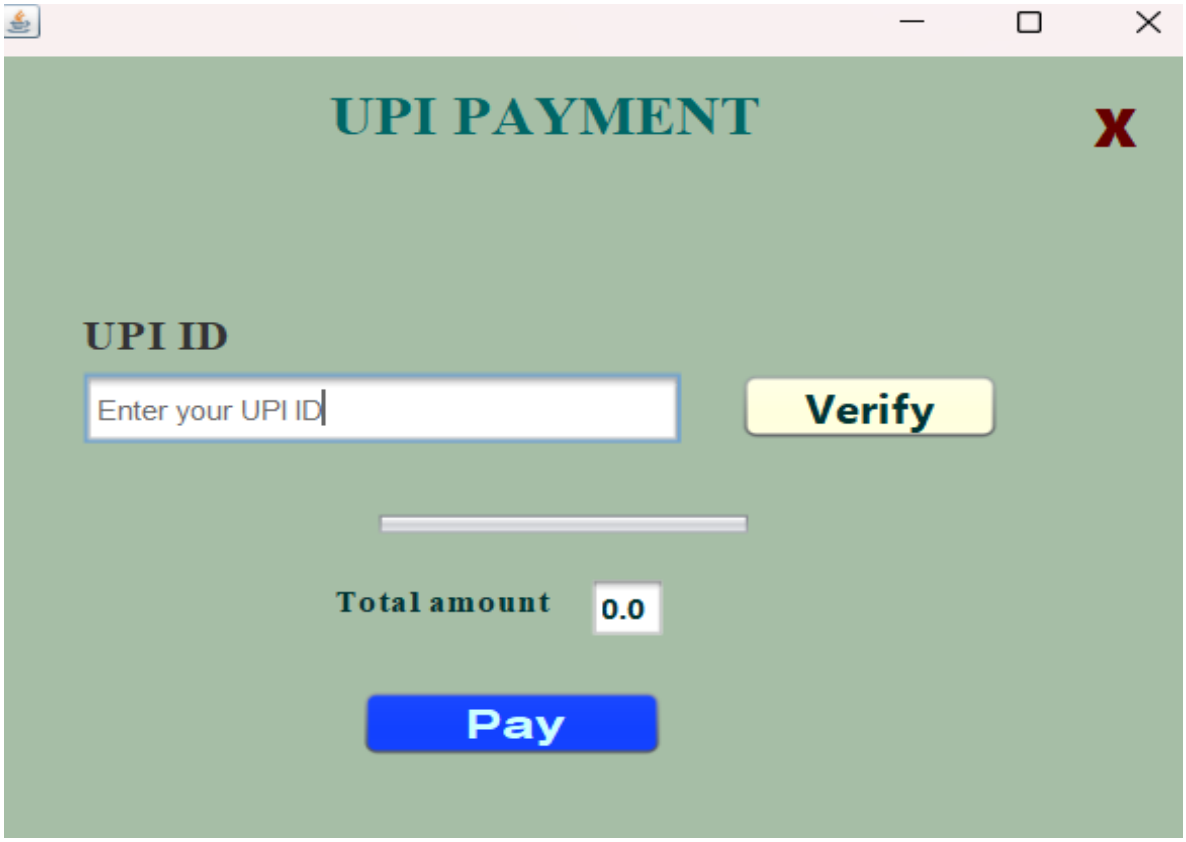


Fig 7.13 UPI payment

Here user can pay for books using the UPI payment option.

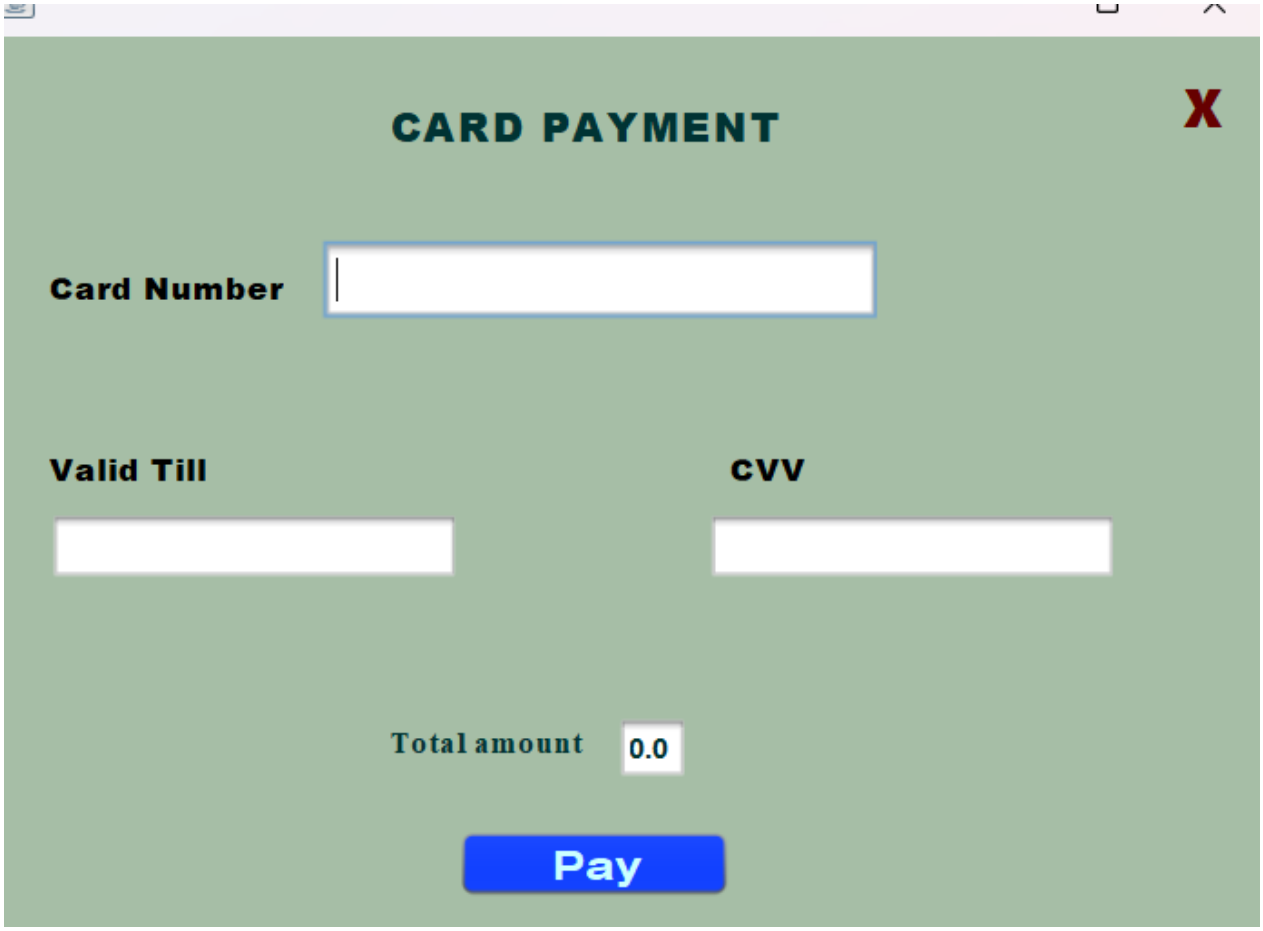


Fig 7.14 Card payment

Here user can pay for books using the Card payment option.

Chapter 8

Conclusion

In conclusion, the online Rent a Book project demonstrates a practical application of web technologies to streamline the borrowing process for readers. By providing a user-friendly platform, it enables users to browse and rent books with ease. The system improves accessibility, reduces the need for physical libraries, and caters to a wide audience. Additionally, it offers efficient inventory management, helping administrators keep track of available and rented books. Security measures, such as authentication and payment integration, ensure safe transactions. The project also lays a foundation for future enhancements, such as mobile compatibility and personalized recommendations. Overall, it addresses modern needs in the digital reading space efficiently and effectively.

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