

Introduction

The **Swap Shelf** is a platform designed to facilitate the exchange of books between users. It aims to connect people who wish to swap books at minimal costs by only paying for shipping. This platform seeks to reduce the costs associated with buying new books and promote sustainable practices by encouraging users to trade pre-loved books. The concept leverages the growing trend of book-sharing and fosters a community of book enthusiasts.

Beyond financial benefits, Swap Shelf promotes sustainability by supporting the recycling of books, thus reducing waste and minimizing the environmental impact of book production. This aligns with the growing awareness around the importance of sustainability and the movement towards a circular economy.

Moreover, Swap Shelf leverages the growing trend of book-sharing to foster connections among readers. It creates a community where book lovers can share books, ideas, and recommendations, discover new authors and genres, and build a sense of belonging, strengthening the global reading community.

Objective

The primary objective of this project is to create an easy-to-use platform where users can exchange books with others, ensuring they only pay for shipping costs. The specific goals of the platform are:

- To reduce the financial burden of purchasing new books.
- To promote the reuse of books, contributing to sustainability.
- To create a community that connects readers and fosters a culture of sharing knowledge.
- To implement secure user login systems and efficiently manage book listings.

Why we chose it?

We chose this project because it revolves around a simple yet powerful idea: creating a platform for people to exchange books. It's a concept that's often overlooked, but one that holds great value. While the importance of reading, reusing, and sharing books is something we all understand, there aren't many platforms out there focusing on it. By bringing this idea to life, we want to revive the spirit of book sharing—something we can all connect with and appreciate.

What excites us even more is the potential for innovation this project holds. It's an opportunity to introduce fresh features and unique ideas that could make the platform stand out. With a little creativity and a new perspective, we believe Swap Shelf has the chance to be not just another book exchange platform, but one that truly stands out and makes a real impact.

Required Tools

To build **Swap Shelf**, we used the following technologies and tools:

- **Frontend:**
 - HTML
 - CSS
 - JavaScript
- **Backend:**
 - PHP
 - MySQL
 - XAMPP
- **Database:**
 - MySQL
- **System:**
 - Windows
- **IDE:**
 - Visual Studio Code

Methodology

Homepage

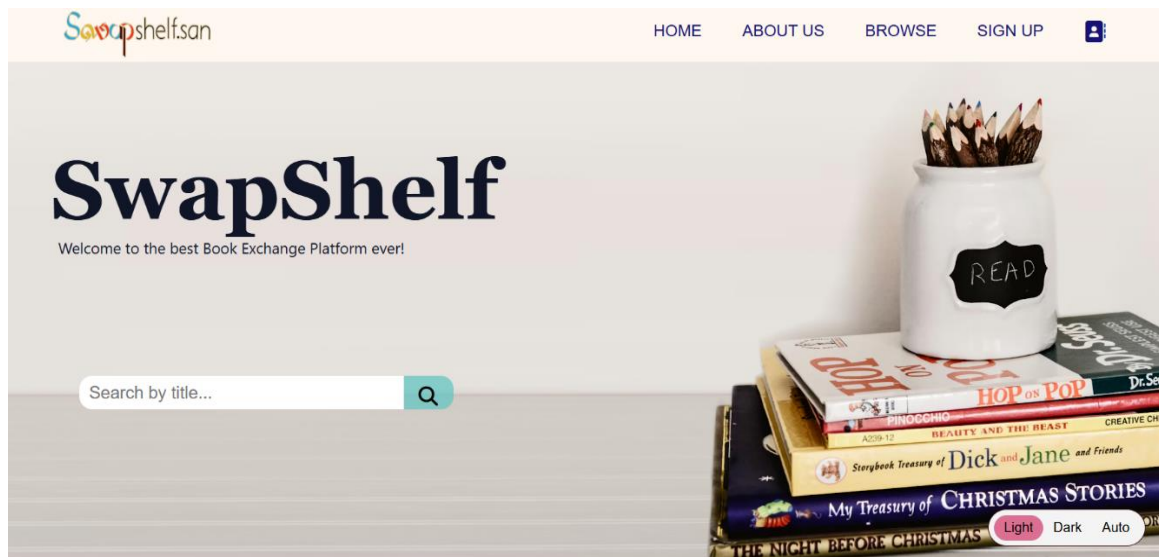


Fig 1 Homepage (first view)

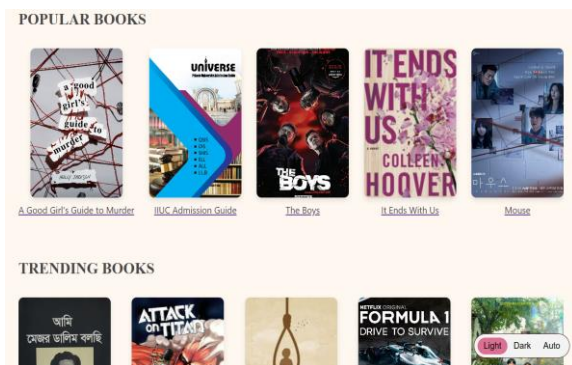


Fig 2.1 Featured Books on the Homepage
– Light/Auto themed

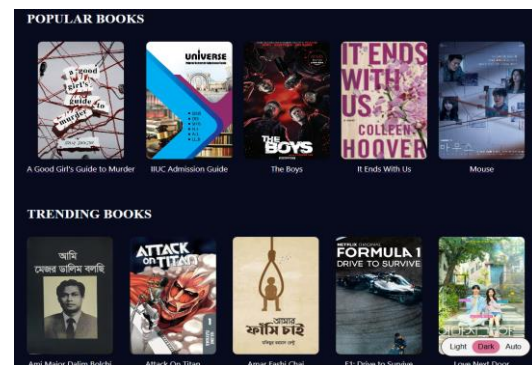


Fig 2.2 Featured Books – Dark Themed

Description: The **homepage** is the first point of contact for users visiting the platform, designed to provide a welcoming and intuitive experience. It includes options for users to **log in** or **register** seamlessly, along with an engaging introduction to the platform's purpose and features.

On the homepage, users can:

- Browse through the **latest book listings** to discover recently added books.
- Explore **featured books** available for exchange, showcasing popular or noteworthy titles.
- Use the **search bar** to quickly find specific books or genres, ensuring efficient navigation.
- Scroll through a **horizontal genre carousel** where clicking on a genre reveals books under that category.

Additionally, the platform includes a **Dark Mode feature**, catering to night owls readers who prefer browsing with reduced eye strain. With just a click, users can switch to a darker theme, enhancing comfort during late-night exploration of books.

Search Bar

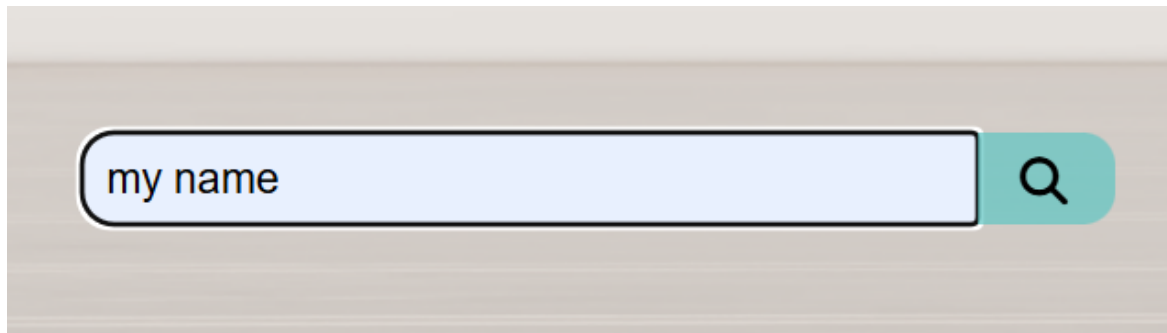


Fig 3 Search Bar on Homepage

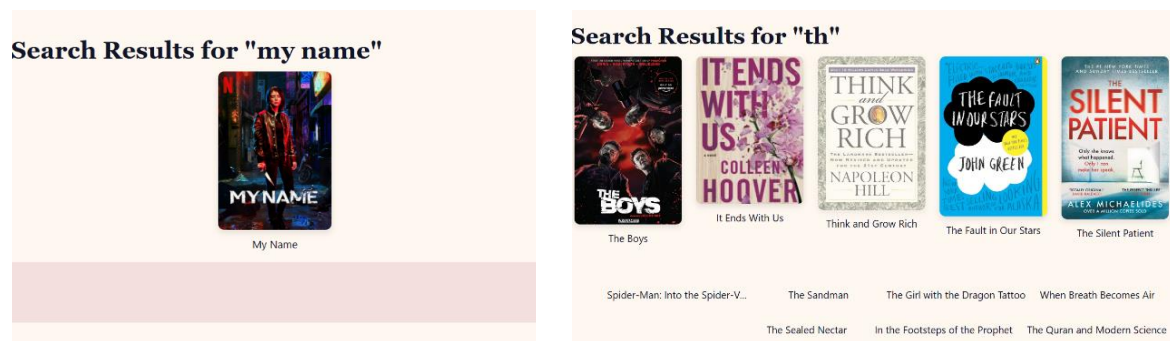


Fig 4 Search bar results for various searches

Description: A powerful and intuitive search bar placed prominently at the top, allowing users to quickly find specific books or genres by entering keywords.

Genre Carousel



Fig 5 Horizontal Genre Carousel (Categories)

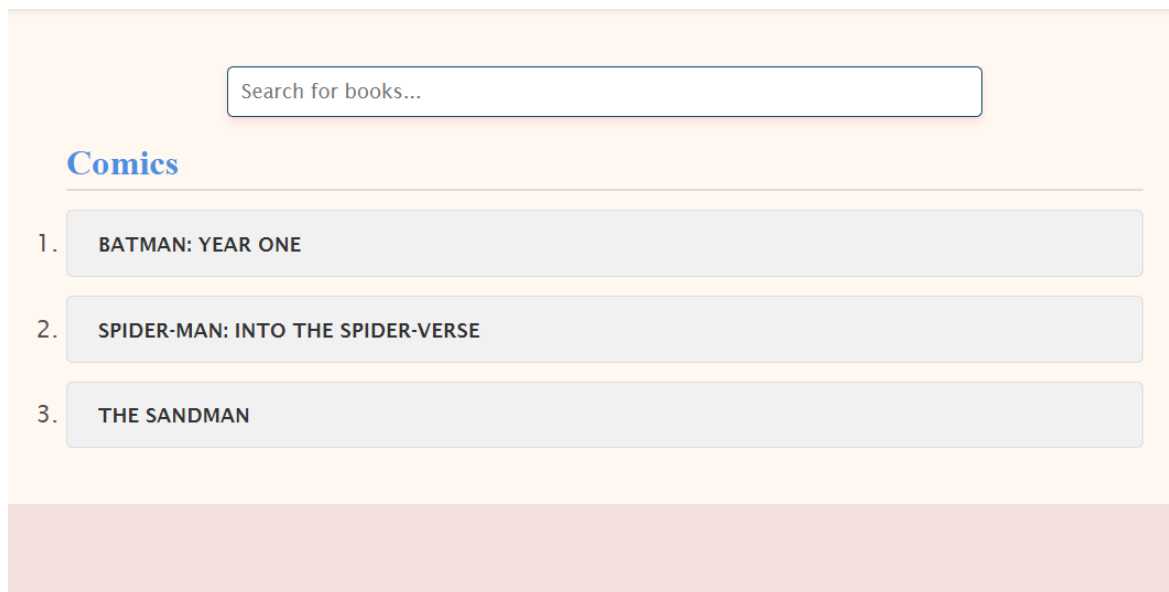


Fig 6 Showing the list of book after clicking on a Category

Description: Scrolling down the homepage reveals an interactive **horizontal genre carousel** feature, where users can browse through various book genres. Clicking on a genre displays all books available under that category, making exploration easy and enjoyable.

User Login and Signup

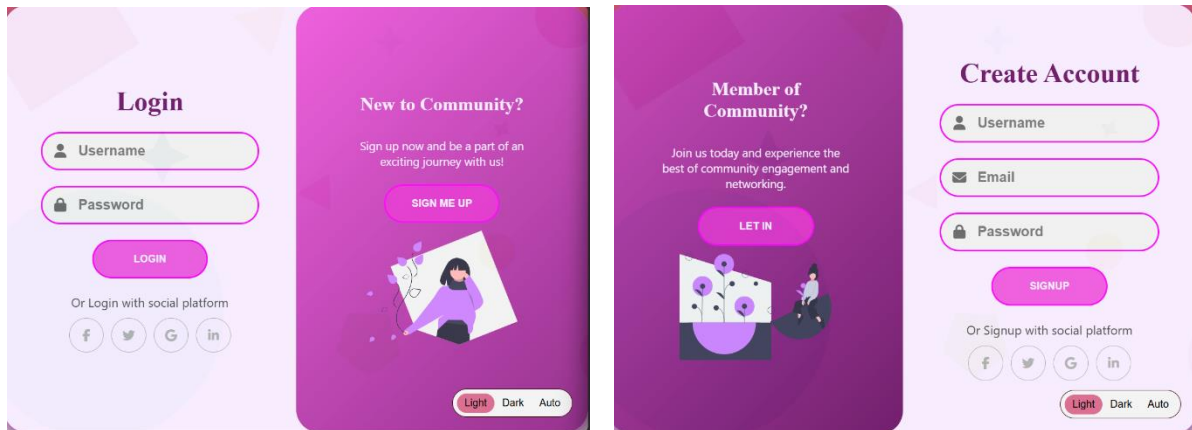


Fig 7 Login and Signup Page (switched using animation)

Server: 127.0.0.1 » Database: signup-login » Table: users

Showing rows 0 - 2 (3 total, Query took 0.0003 seconds.)

```
SELECT * FROM `users`
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Extra options

	ID	Username	Email	Password
<input type="checkbox"/> Edit Copy Delete	1	afra	afra@gmail.com	\$2y\$10\$qPeEij3XUWkJRAd24GQUbeTsSLYfVXO.jqt57ik9xT
<input type="checkbox"/> Edit Copy Delete	2	shosi	shosi@gmail.com	\$2y\$10\$DVmyz1kKxO13F3RoYwXp0.Pw.0K0/GFFbxxv2T905
<input type="checkbox"/> Edit Copy Delete	3	shawon	shawon@gmail.com	\$2y\$10\$nscGpdvIzNO/O7fZqZto.ufNq0XrrPn1e2i6lerwPvo...

Check all | With selected: Edit Copy Delete Export

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Fig 8 Database table: users

Description: The login page allows users to log into their accounts or create new ones. The page uses PHP to validate user credentials against the MySQL database, ensuring secure access to the platform.

The second screenshot displays the **backend database table** used to store users' information. The table, named **users**, includes the following columns:

1. **ID** - A unique identifier for each exchange request.
2. **Username** – A unique username for identification.
3. **Email** – A unique email address to avoid fake accounts.
4. **Password** - The user's provided email address for contact.

User Profile Page

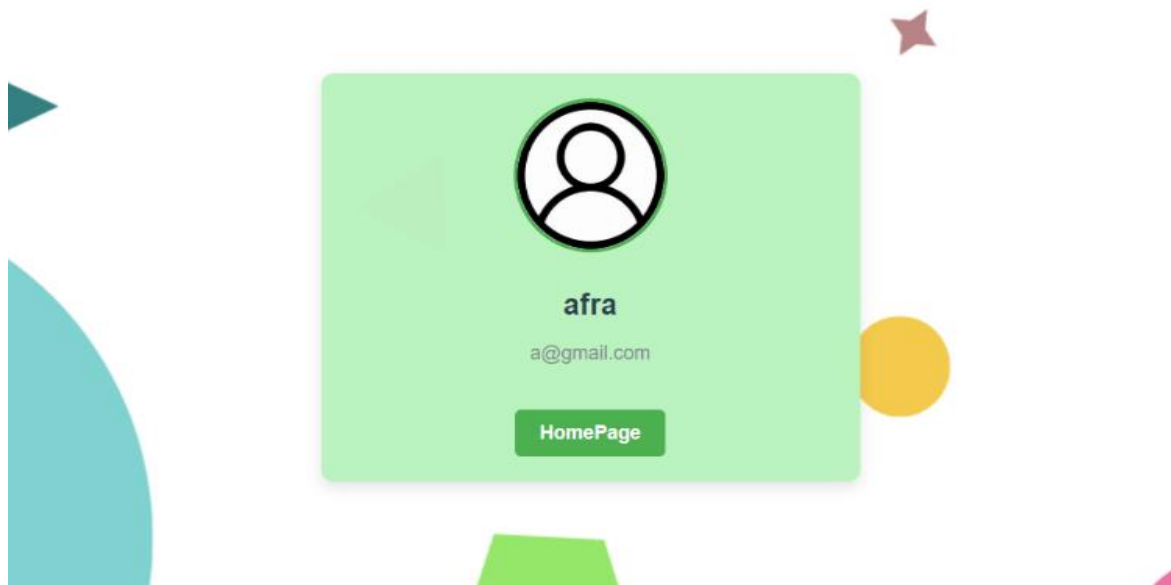


Fig 9 User Profile Page

Description: (WIP) The user, who has currently logged in, can view their profile status.

Browse

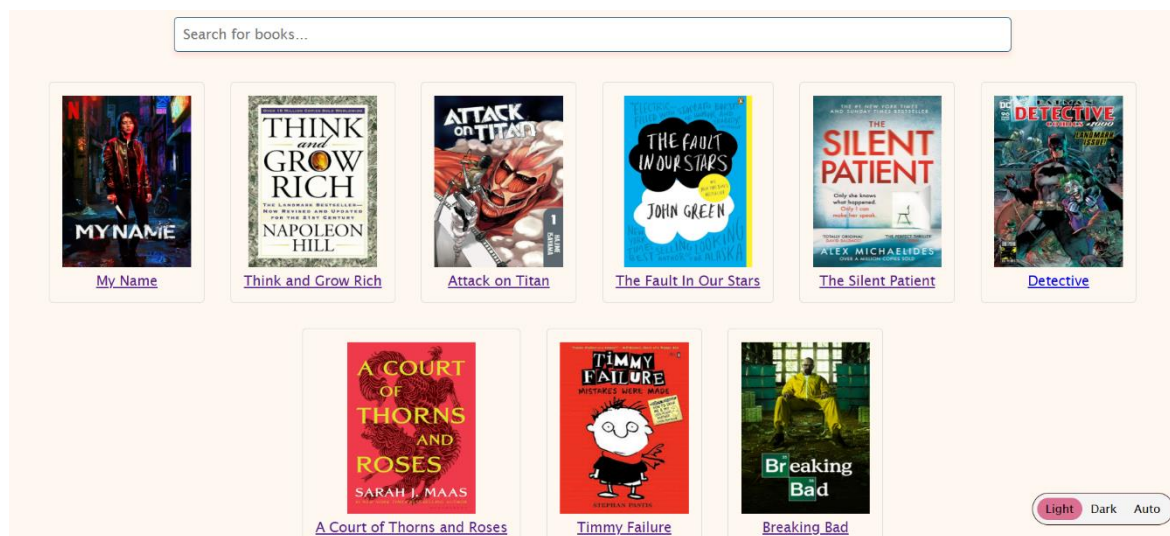


Fig 10 Browse Page

Description: This page displays all books available for exchange, with options to filter by searching; information is dynamically loaded.

Exchange Form Page

Attack On Titan

Exchange Procedure:

Please provide either your Email or Phone Number (or both) for contact.

Name:

Book Name:

Enter Email ID:

Phone Number:

Date of Exchange (Optional):

Light

Dark

Auto

Fig 11 Exchange Procedure

Server: 127.0.0.1 » Database: signup-login » Table: exchange_requests

Showing rows 0 - 2 (3 total, Query took 0.0003 seconds.) [id: 1... • 3...]

`SELECT * FROM `exchange_requests` ORDER BY `exchange_requests`.`id` ASC`

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Extra options

	id	name	book	email	phone	exchange_date
<input type="checkbox"/> Edit Copy Delete	1	shawon	The Quran and Modern Science	shawon@gmail.com	01245798214	2024-11-05
<input type="checkbox"/> Edit Copy Delete	2	afra	A Good Girl's Guide to Murder	afra@gmail.com	092190660	2024-12-17
<input type="checkbox"/> Edit Copy Delete	3	shosi	Love Next Door	shosi@gmail.com	019082137018	2024-12-19

☐ Check all | With selected: Edit Copy Delete Export

Fig 12 Database table: exchange_requests

Description: The **Exchange Form Page** allows users to submit their book exchange requests by providing essential details. These include their name, the book's name, email ID, phone number, and an optional date for the exchange. This form is user-friendly, ensuring smooth interaction for anyone initiating a book exchange. Once the user fills in the required information and submits the form, the data is stored in the backend database.

The second screenshot displays the **backend database table** used to store exchange request information. The table, named `exchange_requests`, includes the following columns:

1. **id** - A unique identifier for each exchange request.
2. **name** - The name of the user submitting the request.
3. **book** - The name of the book they are requesting or offering.
4. **email** - The user's provided email address for contact.
5. **phone** - The user's phone number for alternative communication.
6. **exchange_date** - An optional field that records the suggested date of exchange.

This structure ensures all submitted information is systematically organized and accessible for further processing or review. The combination of the exchange form and database integration streamlines the process, making it efficient and reliable for managing user exchange requests.

Footer and Other Pages

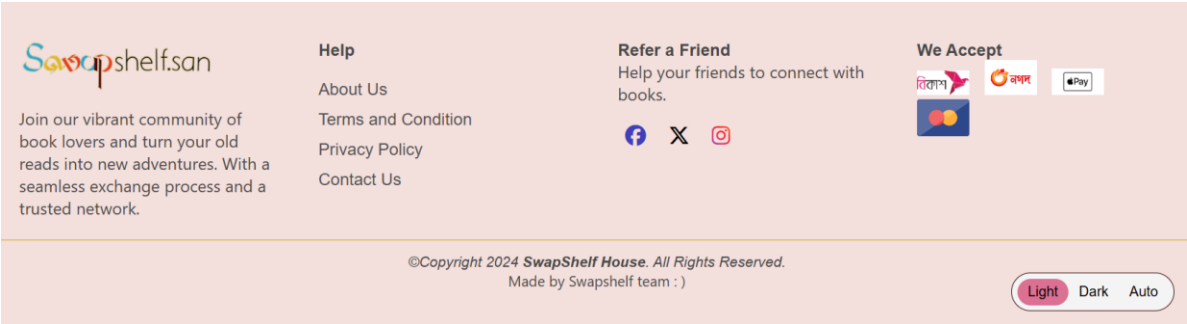


Fig 13 Footer

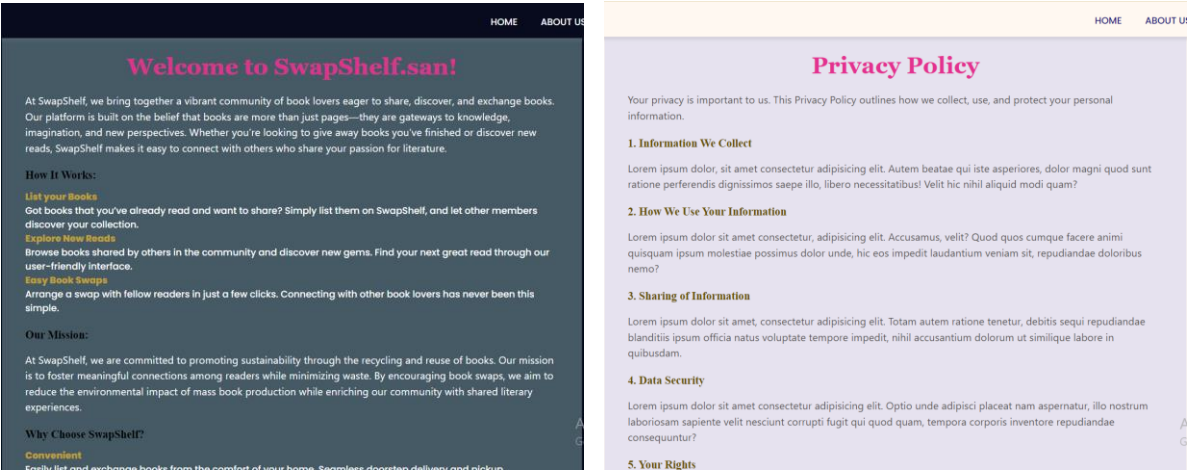


Fig 14 Other Readme pages (after clicking under 'Help' section in the Footer)

Description: Footer and the additional colourful and engaging readme pages are as a user's guide around SwapShelf; along with social media links to be able to connect better with us even on other platforms, finishing off with the touch of copywrite mark to secure the authenticity and licencing of our work.

Future Work

In the future, the platform could be enhanced with the following features:

- **Rating and Review System:** Allow users to rate the books they receive, helping others make informed decisions.
- **Additional Payment Integration:** Integrate more payment options for shipping or premium features.
- **Admin Panel:** Implement a secure admin panel for managing users, book listings, and transactions.
- **Chat System:** Add a chat feature to enable users to communicate directly with each other, discuss book exchanges, and build a stronger community.
- **User Profile Page:** Upgrade it further so the user profile page allows users to view their book listings, transaction history, and account details. It also provides an option to edit personal details and manage book exchanges.

Challenges Faced

Database Management: Handling large amounts of data and ensuring fast performance when filtering book listings was challenging.

User Authentication: Ensuring secure user authentication, especially while handling sensitive information like passwords.

Responsive Design: Ensuring the platform looks good and functions well on all devices, especially mobile phones, posed some design challenges.

Testing: With multiple features and user roles, extensive testing was required to ensure everything worked as expected.

Conclusion

The **Swap Shelf** platform successfully meets the objective of providing a sustainable, easy-to-use book exchange platform for users. By allowing individuals to trade books with others while only paying for shipping costs, we are contributing to the reduction of book waste and offering an affordable way to access new reading material. Moving forward, the platform could be expanded with additional features like a mobile app and an admin dashboard to improve usability and scalability.