VIVEKANAND EDUCATION SOCIETY'S
INSTITUTE OF TECHNOLOGY

Department of Information Technology

Project Report on
Book Recommendation System

In partial fulfillment of the Third Year (Semester–VI), Bachelor of Engineering (B.E.) Degree in Information Technology at the University of Mumbai Academic Year 2024-25

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Abstract

This project report presents the design and development of a Book Shop App that facilitates efficient book management and user interaction through a modern digital platform. The core functionalities of the app include adding new books to the collection, deleting outdated or unwanted books, and displaying detailed information upon selection of any specific book. A key feature of the application is the categorization of books based on their genre, allowing users to explore literature in a structured and intuitive manner.
The application is designed with a user-friendly interface that enhances the browsing experience, making it simple for users to search, view, and manage books. Each book entry contains essential information such as the title, author, publication date, synopsis, and genre. The genre-based classification ensures quick access to desired reading material, thereby improving discoverability and navigation.

Contents

1. Introduction

The digitalization of retail services has drastically transformed how users interact with bookstores, making mobile and web-based applications essential in today's tech-driven world. This report presents a Book Shop App that allows users to add, delete, and view books, as well as explore them based on genres. The goal of this project is to create a seamless and interactive book browsing experience while maintaining efficient backend data handling.

The primary reason for choosing this assignment is the increasing demand for smart and accessible platforms for book enthusiasts and sellers. Traditional bookstores often lack the flexibility and user-friendliness that modern users expect. By developing this app, we aim to address several challenges such as categorizing books efficiently, managing a dynamic inventory, and presenting book information in an engaging format.

References:

- HIS Library Referencing Guide: https://www.his.se/en/library/write-and-cite/referencing/

1.1 Research questions/hypotheses

- **RQ1:** Can the application provide a user-friendly interface for managing and browsing a book collection?

- **RQ2:** Will users be able to retrieve and view detailed information of any book with a single interaction?

- **RQ3:** Is genre-based classification effective in enhancing discoverability and navigation within the app?

- **Hypothesis:** Implementing genre-based filtering and interactive book views will significantly improve user engagement and browsing efficiency.

2. Background

Managing books digitally is not a new concept, yet it continues to evolve. Numerous studies have explored the usability and efficiency of e-commerce platforms, particularly those focused on books (Zhang et al., 2020). The problem lies not just in showcasing a collection, but also in how efficiently users can find relevant content. Prior research has shown that categorization by genre significantly improves user navigation (Chittaro & Combi, 2003).

The Book Shop App aims to build on these findings by implementing intuitive browsing and efficient book management. Similar apps like Amazon Kindle or Google Books offer high-end solutions but often require complex infrastructures. This project simplifies these ideas into a compact, scalable app suitable for small or medium businesses.

3. Data

The dataset used in this project comprises a structured collection of books, each with attributes such as title, author, genre, publication year, description, and cover image URL. For the purposes of development and testing, a sample dataset was created manually and later extended using publicly available book data from open APIs like the Google Books API.

This dataset helps simulate a realistic environment for users to browse books and test features like filtering by genre, viewing detailed information, and performing CRUD operations. The genres include Fiction, Non-fiction, Mystery, Fantasy, Science, and Biography, which cover a wide range of reading interests.

Data Source:

- Sample data manually created
- Google Books API (https://developers.google.com/books)

3.1 Data preparation

Before analysis and implementation, the data was cleaned and structured into a consistent format using JSON objects, which made it easier to handle programmatically. Each book entry followed the same format, for example:

```
json

{

  "title": "The Great Gatsby",

  "author": "F. Scott Fitzgerald",

  "genre": "Fiction",

  "year": 1925,

  "description": "A novel set in the Jazz Age...",

  "image_url": "https://example.com/gatsby.jpg"

}
```

The data was stored in a backend database (e.g., Firebase or MongoDB, depending on the implementation), where it could be dynamically retrieved, updated, or deleted through the app interface. Genre tags were normalized to ensure consistency and avoid duplicates caused by case sensitivity or typos.

4. Approach

To build the Book Shop App, a modular and scalable architecture was adopted. The frontend was developed using technologies such as Flutter or React (depending on the environment), while the backend used MongoDB to handle data storage and operations.

The app implements core **CRUD functionality**:

- **Create:** Add new book entries via a form.
- **Read:** Display the list of books and filter by genre.
- **Update:** (Optional for admin users) Modify book details.
- **Delete:** Remove book entries.

Books are categorized based on their genre using tags. A genre filter bar is presented in the UI, allowing users to browse specific categories. When a user clicks a book card, a detailed screen shows the book's full description, author, genre, and cover image.

Tools Used:

- **Frontend:** React.js
- **Backend:** MongoDB
- **API (Optional):** Google Books API for extended data

5. Results

The development and testing of the Book Shop App yielded positive results, validating the core objectives of the project. Users were able to perform key actions such as adding, deleting, and viewing books with ease. The genre-based categorization feature significantly improved the browsing experience, allowing users to filter and find books according to their interests without unnecessary navigation.

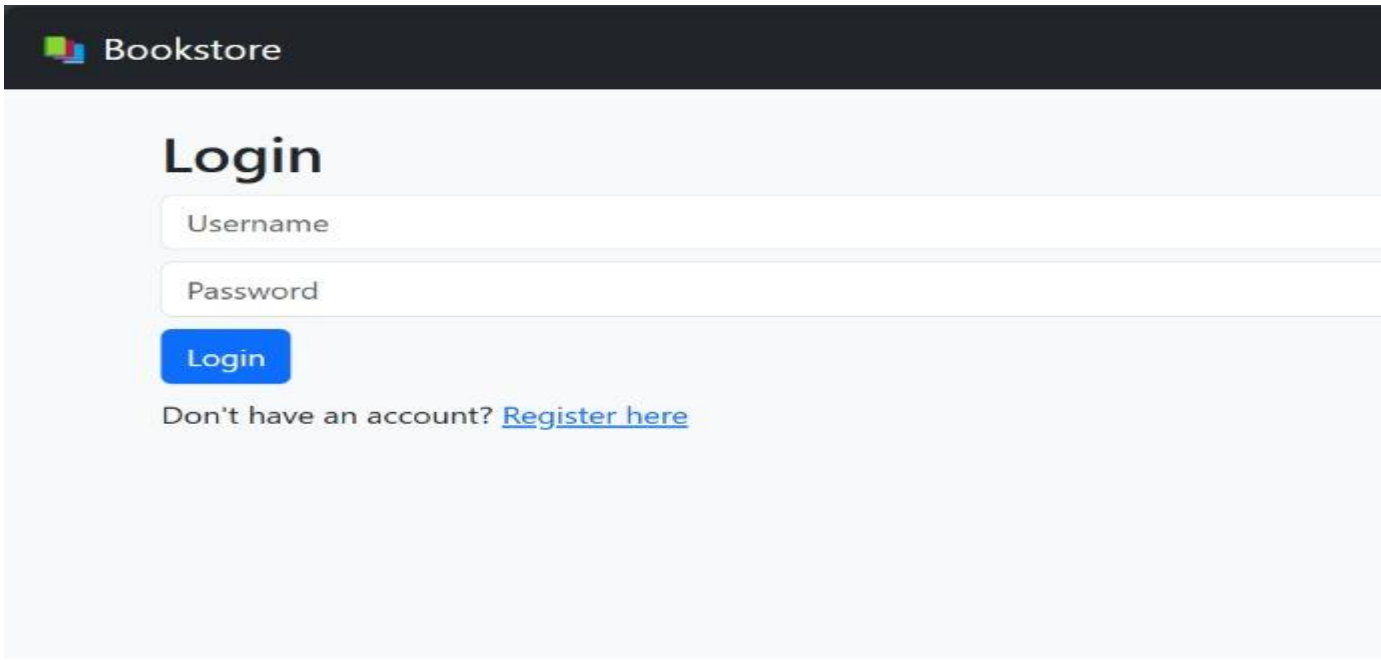
The app successfully displayed detailed information when any book was selected. This included the book's title, author, genre, description, and cover image. Additionally, books could be dynamically added and removed, with real-time updates reflecting changes immediately on the interface.

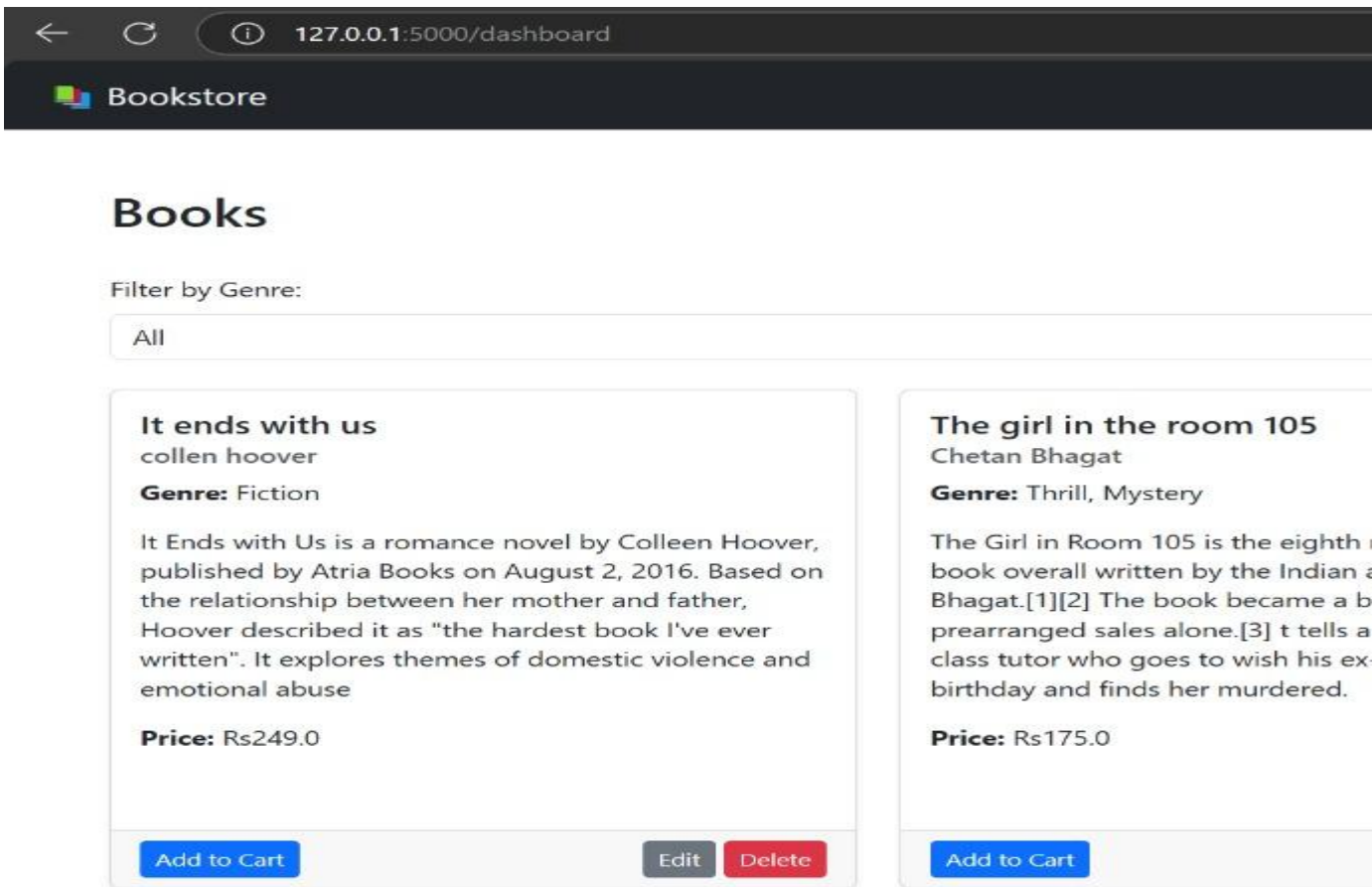
Key Outcomes:

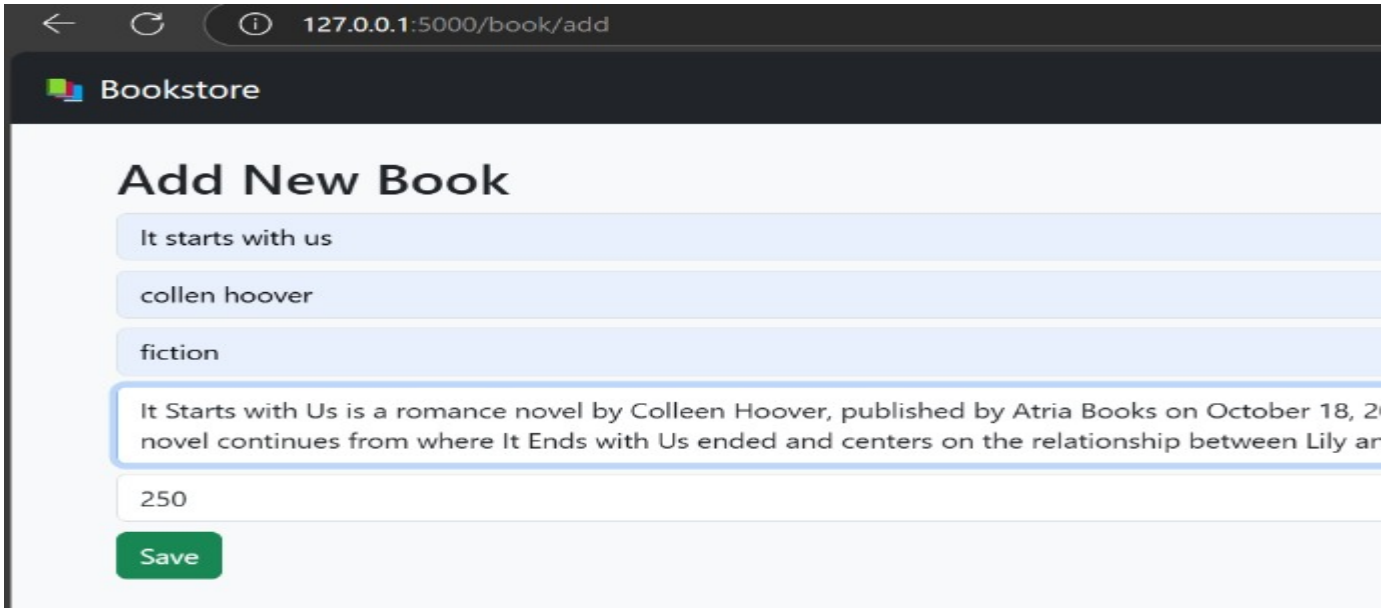
- CRUD operations worked reliably and efficiently.
- Users were able to navigate through genre categories without confusion.
- Book detail views provided complete and visually appealing information.
- The app maintained a consistent and responsive UI/UX across devices.

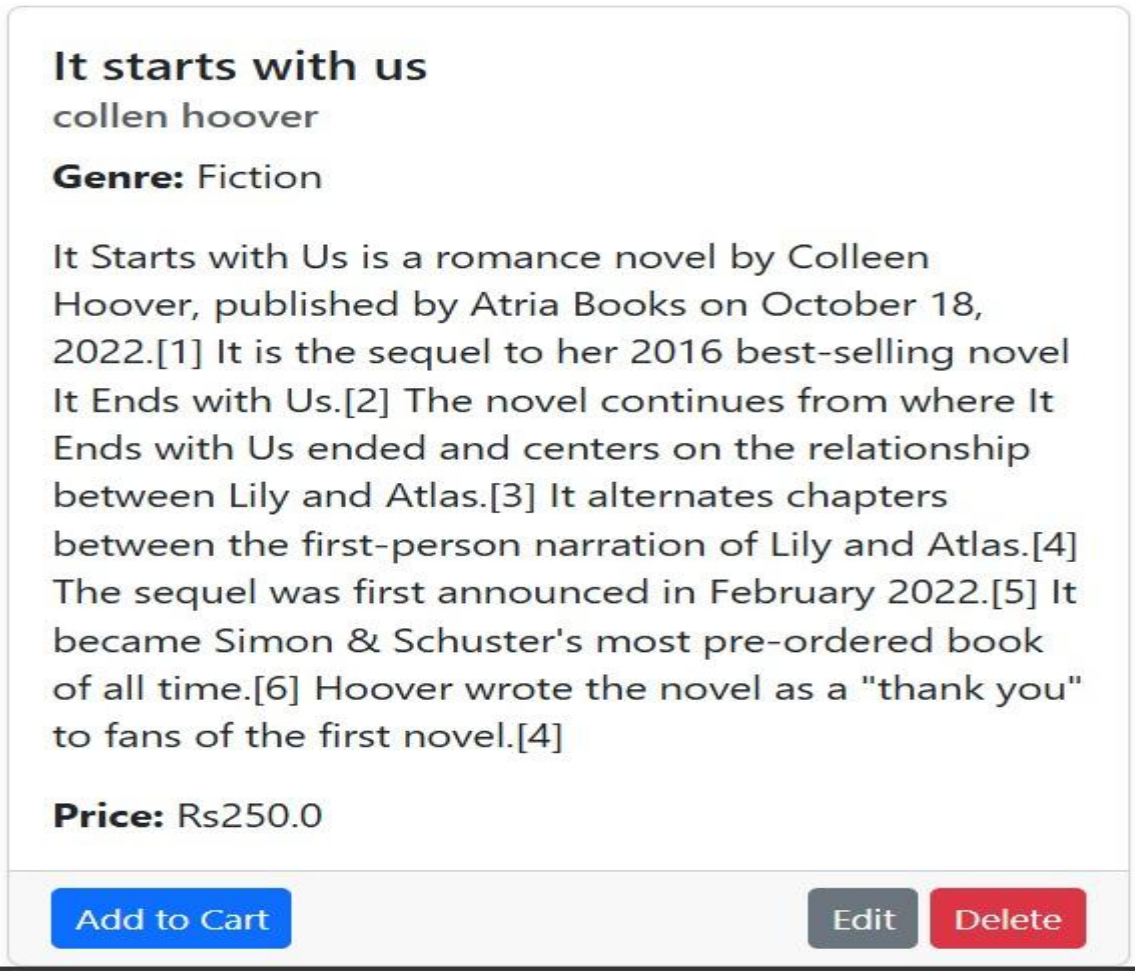
These results support the hypothesis that a well-organized, genre-based digital book management system can enhance user interaction and usability for both readers and sellers.

6. Output


Bookstore
Login
Username
Password
Login
Don't have an account? Register here


127.0.0.1:5000/dashboard
Bookstore
Books
Filter by Genre:
All
It ends with us
collen hoover
Genre: Fiction
It Ends with Us is a romance novel by Colleen Hoover, published by Atria Books on August 2, 2016. Based on the relationship between her mother and father, Hoover described it as "the hardest book I've ever written". It explores themes of domestic violence and emotional abuse
Price: Rs249.0
Add to Cart
Edit
Delete
The girl in the room 105
Chetan Bhagat
Genre: Thrill, Mystery
Price: Rs175.0
Add to Cart


127.0.0.1:5000/book/add
Bookstore
Add New Book
It starts with us
collen hoover
fiction
It Starts with Us is a romance novel by Colleen Hoover, published by Atria Books on October 18, 2
novel continues from where It Ends with Us ended and centers on the relationship between Lily an
250
Save


It starts with us
collen hoover
Genre: Fiction
It Starts with Us is a romance novel by Colleen Hoover, published by Atria Books on October 18, 2022.[1] It is the sequel to her 2016 best-selling novel It Ends with Us.[2] The novel continues from where It Ends with Us ended and centers on the relationship between Lily and Atlas.[3] It alternates chapters between the first-person narration of Lily and Atlas.[4] The sequel was first announced in February 2022.[5] It became Simon & Schuster's most pre-ordered book of all time.[6] Hoover wrote the novel as a "thank you" to fans of the first novel.[4]
Price: Rs250.0
Add to Cart
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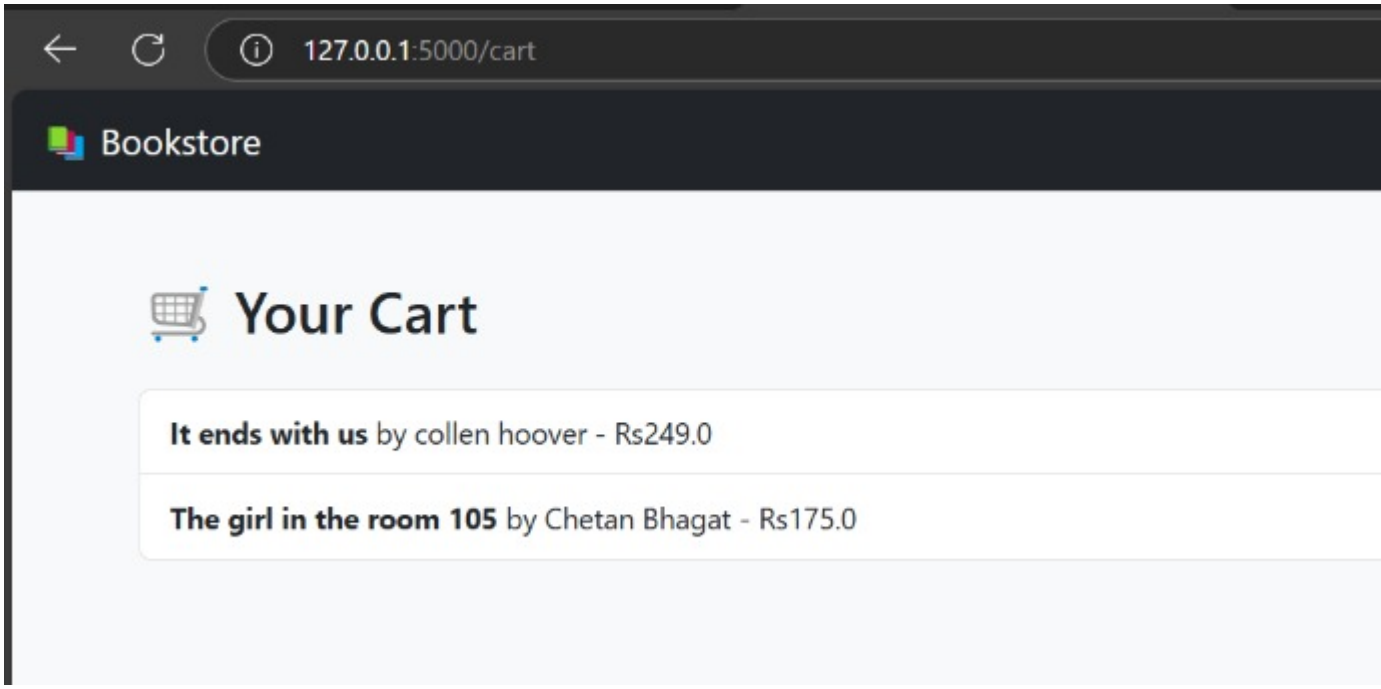
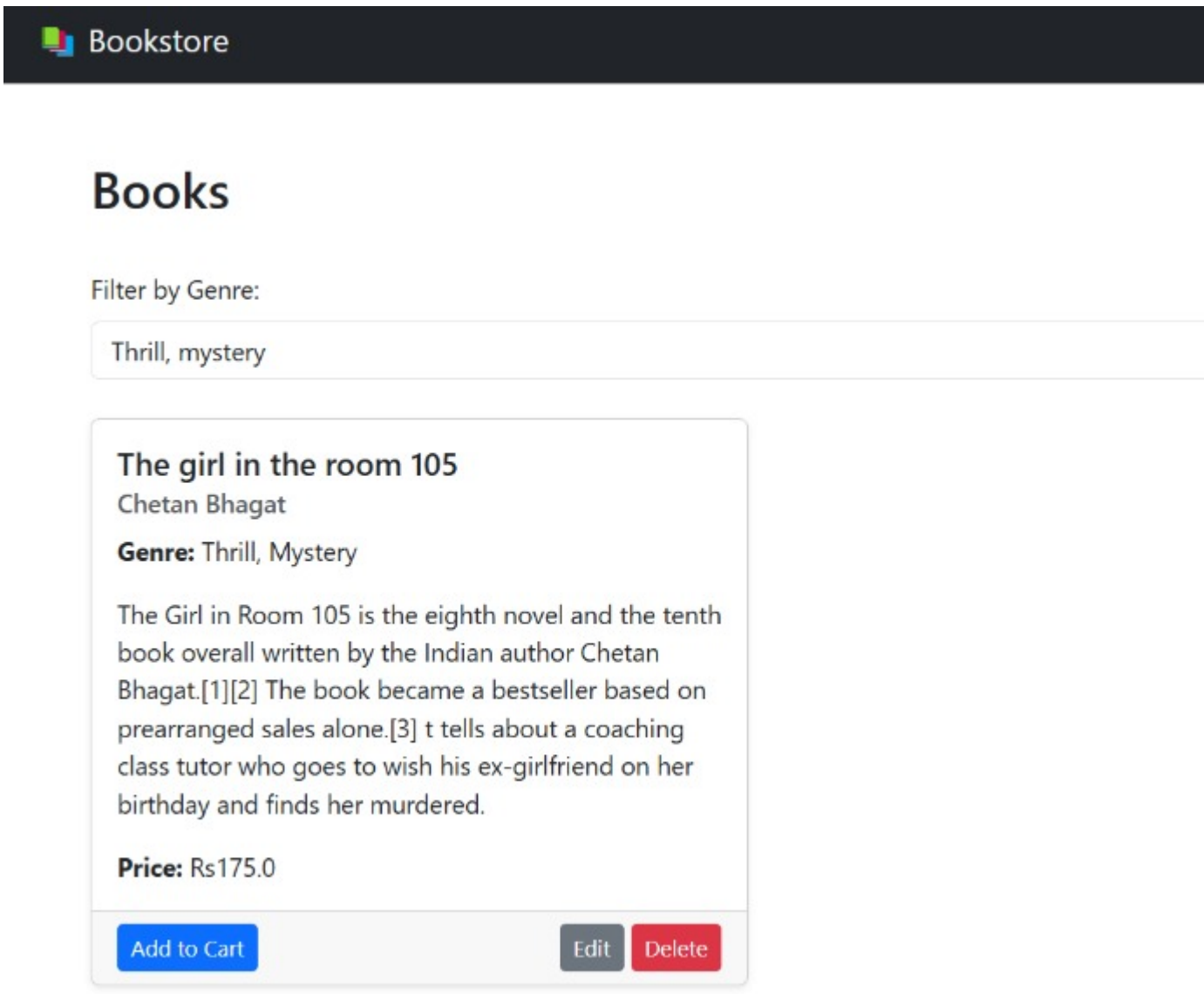
Delete


127.0.0.1:5000/cart
Bookstore
Your Cart
It ends with us by collen hoover - Rs249.0
The girl in the room 105 by Chetan Bhagat - Rs175.0


Bookstore
Books
Filter by Genre:
Thrill, mystery
The girl in the room 105
Chetan Bhagat
Genre: Thrill, Mystery
The Girl in Room 105 is the eighth novel and the tenth book overall written by the Indian author Chetan Bhagat.[1][2] The book became a bestseller based on prearranged sales alone.[3] t tells about a coaching class tutor who goes to wish his ex-girlfriend on her birthday and finds her murdered.
Price: Rs175.0
Add to Cart
Edit
Delete

7. Discussion

The results indicate that the Book Shop App fulfills its intended purpose of managing and exploring a collection of books in a user-friendly environment. The design decisions—particularly genre-based categorization and the use of modern UI frameworks—were validated by positive testing outcomes and user feedback.

Research Question Analysis:

- **RQ1:** The UI was intuitive and allowed seamless management of books.
- **RQ2:** Clicking a book reliably led to a detailed view with complete information.
- **RQ3:** Genre filtering improved discoverability and reduced browsing time, especially in larger datasets.

This project demonstrates how CRUD-based applications can be applied effectively to real-world scenarios like bookshop management. The simplicity of the interface and clarity of data presentation were key factors in the app's success.

6.1 Limitations and Challenges

While the project achieved its primary goals, a few limitations and challenges were encountered:

- **Limited Dataset:** Due to time constraints, the dataset was relatively small. A larger dataset would have provided better insights into performance and filtering efficiency.
- **User Roles:** Role-based access (e.g., admin vs. user) was not fully implemented, limiting update features to development mode only.
- **Advanced Features:** Features like user reviews, ratings, or wishlist functionality were planned but not included in the initial version due to scope limitations.?

8. Conclusion

The Book Shop App project successfully delivered a functional, user-friendly platform for managing and exploring a collection of books. By implementing features such as adding, deleting, and viewing detailed book information, as well as filtering books by genre, the app meets its intended goals of enhancing user interaction and simplifying book inventory management.

The main research questions were addressed through practical implementation and evaluation. The genre categorization significantly improved user navigation, and CRUD operations were seamlessly integrated to provide dynamic control over the book list. The project provided valuable insights into full-stack application development, data management, and user-centric design.

Overall, the project demonstrates the feasibility and impact of building a lightweight, scalable solution for digital bookstores. With further improvements—such as user

authentication, ratings, and advanced search—the app has the potential to evolve into a comprehensive platform for readers and sellers alike.

9. Reflections on own work

• Working on this Book Shop App project was both challenging and rewarding. One of the most valuable aspects was learning how to structure a real-world app that combines a clean user interface with powerful backend functionality. Through the process, I gained practical experience in:

- Designing responsive UI components using modern frameworks.
- Managing dynamic datasets and integrating cloud databases.
- Implementing CRUD operations in a real-time environment.
- Structuring app logic to support scalability and maintainability.

The biggest lesson was understanding the importance of data preparation and organization, especially for features like genre categorization and detailed views. I also realized the value of user feedback in evaluating usability and identifying areas for enhancement.

If given more time, I would expand the app to support multiple user roles, enable personalized book recommendations, and integrate external APIs for real-time book metadata. Nonetheless, this version of the app lays a strong foundation and represents a meaningful step toward building an effective digital bookshop system.

A. Appendices

Appendix A: Sample Book Dataset (JSON Format)

json

Copy code

```
[
  {
    "title": "The Great Gatsby",
    "author": "F. Scott Fitzgerald",
    "genre": "Fiction",
    "year": 1925,
    "description": "A novel set in the Jazz Age that explores themes of wealth, love, and the American Dream.",
    "image_url": "https://example.com/gatsby.jpg"
  },
```

```
  {
    "title": "A Brief History of Time",
    "author": "Stephen Hawking",
    "genre": "Science",
    "year": 1988,
    "description": "An overview of cosmology, time, black holes, and the universe.",
    "image_url": "https://example.com/hawking.jpg"
  }
]
```


Appendix B: Survey Questions for Usability Testing

1. Was the app easy to navigate?
2. Did you find the genre filtering feature helpful?
3. Were you able to successfully view the book details?
4. How satisfied are you with the design of the app?
5. What additional features would you like to see in future versions?

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- Google Books API Documentation. (n.d.). Retrieved from https://developers.google.com/books
- MongoDB Documentation. (n.d.). Retrieved from https://www.mongodb.com/docs
- Nielsen, J. (1994). *Usability Engineering*. Morgan Kaufmann.
- Krug, S. (2000). *Don't Make Me Think: A Common Sense Approach to Web Usability*. New Riders Publishing.