

BOOK RECOMMENDATION SYSTEM

Project Report Submitted

To

Gujarat University

In partial fulfilment of the requirements for
the award to the Degree of

**5 YEAR INTEGRATED MASTER OF SCIENCE
(COMPUTER SCIENCE)**

SEMESTER – VII

GUIDED BY:

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SUBMITTED BY:

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**DEPARTMENT OF COMPUTER SCIENCE
GUJARAT UNIVERSITY, AHMEDABAD**

YEAR: 2025-26

Department Of Computer Science

Gujarat University



Certificate

Roll No : 73

Seat No : 70015

This is to certify that Ms. Mahale Ruchita Sanjay student of Seventh Semester of 5 years Integrated M.Sc (Computer Science) has duly completed his/her project titled Book Recommendation System for the semester ending in December 2025, towards partial fulfillment of degree of 5 years Integrated M.Sc (Computer Science).

Date of Submission

Internal Project Guide

Course Coordinator

Head of Department

Department Of Computer Science

Gujarat University



Certificate

Roll No : 75

Seat No : 70017

This is to certify that Ms. Makwana Keyuri student of Seventh Semester of 5 years Integrated M.Sc (Computer Science) has duly completed his/her project titled Book Recommendation System for the semester ending in December 2025, towards partial fulfillment of degree of 5 years Integrated M.Sc (Computer Science).

Date of Submission

Internal Project Guide

Course Coordinator

Head of Department

Department Of Computer Science

Gujarat University



Certificate

Roll No : 89

Seat No : 70034

This is to certify that Ms. Patel Netra Jigneshkumar student of Seventh Semester of 5 years Integrated M.Sc (Computer Science) has duly completed his/her project titled Book Recommendation System for the semester ending in December 2025, towards partial fulfillment of degree of 5 years Integrated M.Sc (Computer Science).

Date of Submission

Internal Project Guide

Course Coordinator

Head of Department

Acknowledgement

We would like to take this opportunity to express our heartfelt gratitude to every individual and institution that has played a pivotal role in the successful completion of our project, **Book Recommendation System**. This achievement would not have been possible without the unwavering support, encouragement, and contributions of many who have guided us throughout this journey. The collective efforts and support we received helped us transform our ideas into a well-structured and functional project. This experience has been both academically enriching and personally rewarding.

First and foremost, we are profoundly thankful to our esteemed project guide, **Dr. Maitri Jhaveri**, whose continuous guidance, mentorship, and encouragement have been the cornerstone of our progress. From the initial stages of conceptualizing the idea to the final implementation of the system, Dr. Jhaveri has been a constant source of inspiration. Her deep knowledge, technical expertise, and critical insights not only helped us navigate challenges but also enhanced our problem-solving abilities. Her patient reviews of our work, valuable suggestions, and persistent motivation ensured that we stayed focused, improved consistently, and maintained a high standard throughout the project lifecycle. We are truly fortunate to have had the opportunity to work under her mentorship.

We also extend our gratitude to **Dr. Hiren Joshi**, Head of the Department of Computer Science, Gujarat University, for providing a conducive academic environment and the necessary institutional support to carry out this project. His leadership and vision have fostered a culture of learning, innovation, and practical exposure within the department. The availability of resources and encouragement for project-based learning greatly facilitated our work. We are thankful for the opportunities provided to apply theoretical knowledge to real-world problem-solving.

We would like to express our sincere gratitude to **Dr. Jyoti Pareek** for her guidance and academic supervision during the course of this project. Her general suggestions and observations helped us stay aligned with the academic objectives and requirements of the work. We also appreciate her encouragement and support, which contributed to a structured and disciplined approach throughout the project development. Her emphasis on clarity, consistency, and academic rigor helped us refine our work and maintain quality standards.

We sincerely thank **Dr. Vaidehi Vaghela** for her valuable guidance and feedback, which helped improve the documentation and overall structure of the project. We also express our gratitude to **Jay Patel Sir** for his technical guidance, support, and motivation, which greatly strengthened the system design and enhanced our confidence and skills.

We are thankful to all the faculty members and departmental staff for ensuring the availability of essential facilities and providing administrative support, which played an important role in the smooth and timely completion of our project. We also extend our heartfelt thanks to our friends and family members for their constant encouragement, patience, and moral support throughout this journey. Their belief in us kept us motivated and focused during challenging times, and we are deeply grateful to everyone who contributed, directly or indirectly, to the successful completion of this project.

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Project Profile

Project Title: Book Recommendation System

Aim:

The aim of this project is to design and develop a Book Recommendation System that provides personalized book suggestions based on users' interests, preferences, and interactions. The system supports three user roles namely Author, Reader, and Administrator to ensure effective content management, user engagement, and platform administration. It utilizes recommendation techniques to enhance book discovery and improve the overall reading experience. The project also aims to create a scalable and user friendly platform that can be enhanced with advanced features in the future.

Software Used:

- Flask (Backend)
- MySQL and phpMyAdmin (Database)
- HTML/CSS (Frontend)
- JavaScript (Client-side scripting)

Hardware Used:

- Intel Core i5 or higher processor
- 8GB RAM (minimum)
- 500GB Hard Disk

Team Size: 3

Team Members/Developed By:

- Mahale Ruchita
- Makwana Keyuri
- Patel Netra

Minimum Deployment Environment:

Hardware:

- A computer with at least an Intel Core i3 processor
- 4GB RAM (minimum)
- 250GB Hard Disk

Software:

- Operating System: Windows 10/11 or Linux
- Web Server: Flask (Python-based web framework)
- IDE: VS Code any preferred editor
- Browser: Latest version of Chrome, Firefox, or Ed

About The Project

The Book Recommendation System is a Flask-based web application designed to assist users in discovering books that closely align with their individual reading interests and preferences. The system intelligently analyses various forms of user data, including reading history, ratings, reviews, and overall interaction behaviour, to generate accurate and personalized book recommendations. By leveraging both content-based and collaborative filtering techniques, the system ensures that users receive suggestions that are relevant, diverse, and tailored to their tastes.

The platform supports three major user roles: Author, Reader, and Administrator, each with clearly defined responsibilities. Authors are provided with a secure interface to register on the platform and efficiently manage complete book information, such as titles, genres, descriptions, and other metadata. Readers can browse and search books using multiple criteria, rate and review books they have read, and organize selected books into personal bookshelves for easy access and future reference. Administrators play a critical role in maintaining the integrity of the system by approving author registrations, managing users and book data, and monitoring platform activities to ensure smooth operation.

In addition, the application integrates a robust database system to securely store user profiles, book details, ratings, reviews, and bookshelf data. The system also includes basic data visualization features that help analyse recommendation performance, track user activity trends, and identify popular books. These insights enable continuous improvement of the recommendation engine and overall system performance. Through its user-friendly design and intelligent recommendation capabilities, the Book Recommendation System enhances the book discovery experience and provides a scalable foundation for future enhancements.

Functional Features:

General Features

- Role-based authentication and authorization
- Secure login and access control
- Personalized book recommendation engine
- Search and filter books by genre, author, and keywords
- Continuous learning from user behaviour and feedback

Author Features

- Secure author registration and authentication
- Add, update, and delete book information
- Manage complete book details such as title, genre, description, and author profile
- Track approval status after administrator verification

Reader Features

- User registration and profile management
- Browse and search books using multiple criteria
- Receive personalized recommendations using content-based and collaborative filtering
- Rate and review books
- Full CRUD operations on personal bookshelves

Admin Features

- Approve or reject author registration requests
- Monitor and manage users, books, and reviews
- Remove inappropriate or invalid content
- View analytics such as popular books and user activity trends

Non-Functional Features:

Performance Requirements

- The system shall load all main pages (login, dashboard, book listing) within 2–3 seconds under normal load.
- The system shall generate book recommendations within an acceptable response time after user login.
- The system shall handle multiple users performing searches and recommendations simultaneously without performance degradation.

Usability Requirements

- The system shall provide a user-friendly and intuitive interface for Admin, Author, and Reader roles.

- The system shall be easy to navigate for first-time users without requiring training.
- The system shall display clear messages for successful actions and error conditions.
- The system shall support responsive design for desktop and tablet browsers.

Security Requirements

- The system shall securely store user passwords using encrypted/hashed format.
- The system shall enforce role-based access control to restrict unauthorized actions.
- The system shall prevent unauthorized users from accessing Admin and Author functionalities.
- The system shall protect user data from unauthorized modification and access.

Reliability Requirements

- The system shall be available 24x7, except during scheduled maintenance.
- The system shall handle invalid inputs and unexpected errors without system failure.
- The system shall ensure data consistency and integrity in the database.

Scalability Requirements

- The system shall support an increase in the number of users, books, and reviews without major changes.
- The system shall allow future integration of advanced recommendation algorithms.

Maintainability Requirements

- The system shall be designed using a modular architecture for easy maintenance.
- The system shall allow developers to update features and fix bugs with minimal impact.
- The codebase shall follow standard programming practices for readability and maintainability.

Compatibility Requirements

- The system shall run on Windows and Linux operating systems.
- The system shall be compatible with modern web browsers such as Chrome, Firefox, and Edge.

Data Backup & Recovery

- The system shall support regular database backups to prevent data loss.
- The system shall allow recovery of data in case of system failure.

Components of the System :

Frontend Component

- Provides a user-friendly interface for Admin, Author, and Reader
- Developed using HTML, CSS, and JavaScript to ensure responsive and interactive design

Backend Component

- Implemented using Flask
- Handles business logic, authentication, and access control

Recommendation Engine

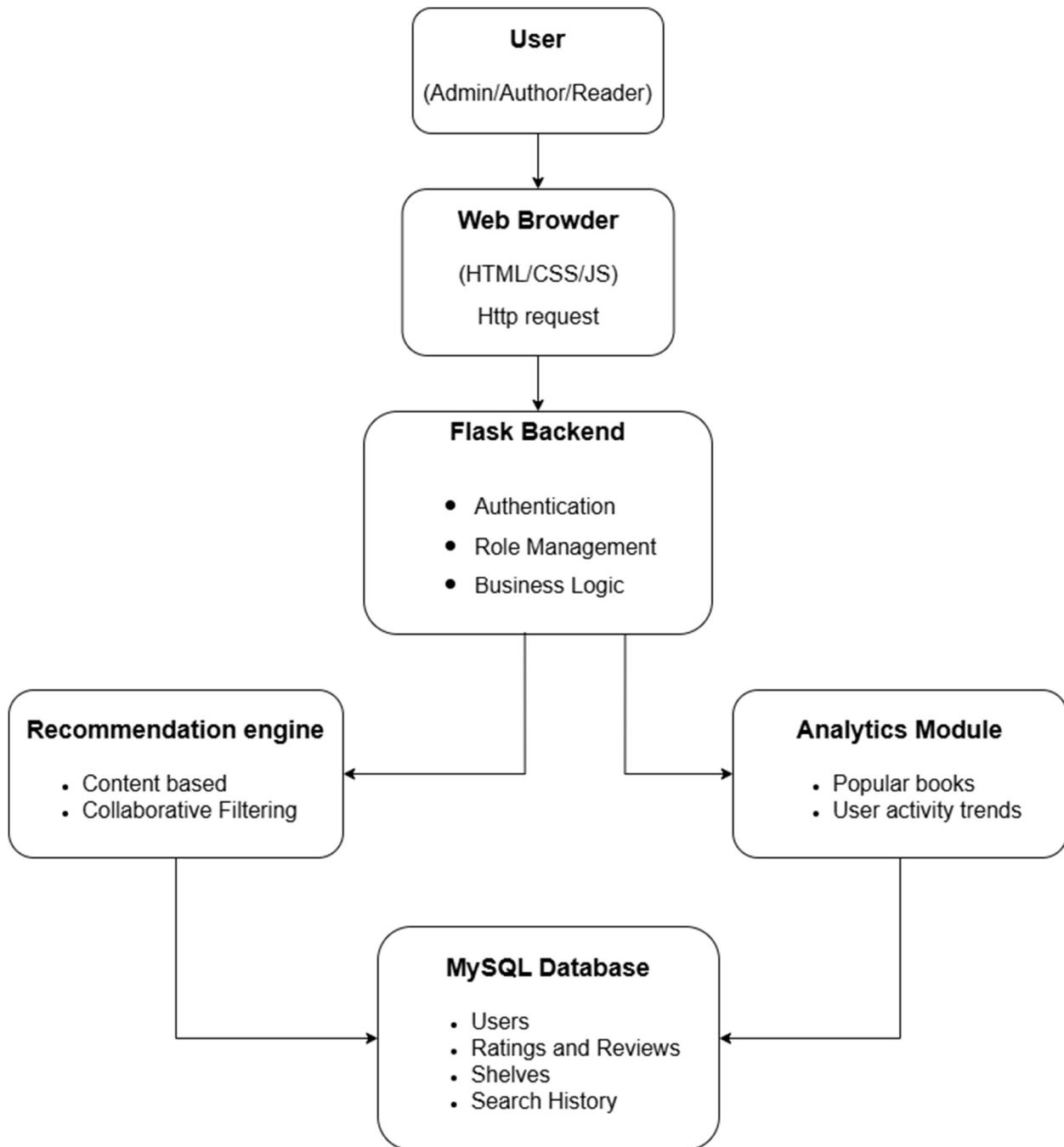
- Implements content-based filtering and collaborative filtering techniques
- Generates personalized book recommendations based on user preferences and interactions

Database Component

- Uses MySQL and phpMyAdmin as the database management system
- Stores information related to users, books, ratings, reviews, and bookshelf data

Analytics & Visualization Module

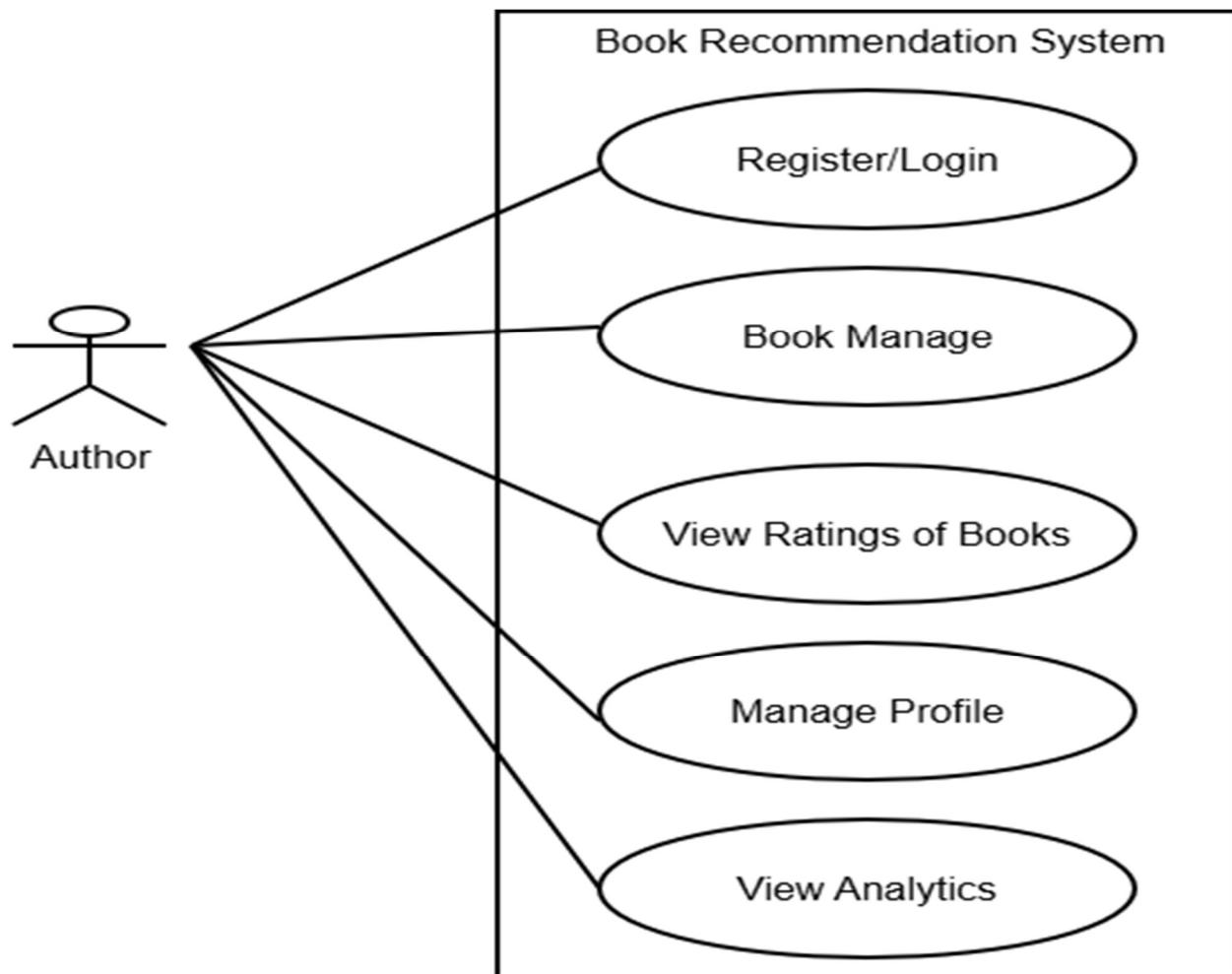
- Displays insights such as user activity and popular books
- Assists administrators in monitoring system usage and performance



Users of the System :

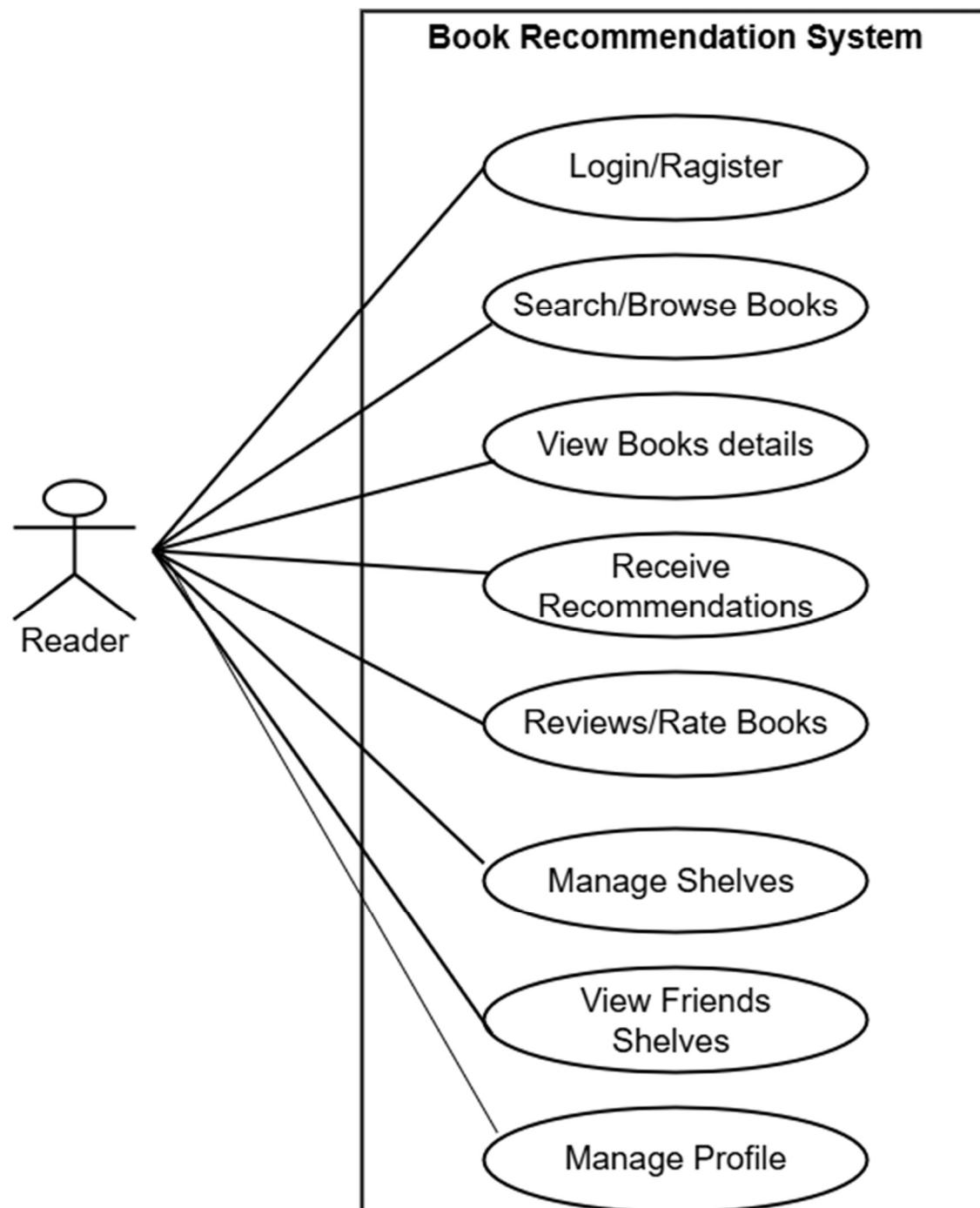
1. Author

Authors are responsible for contributing book content to the platform. They can register securely, manage their book information, and monitor approval status after admin verification.



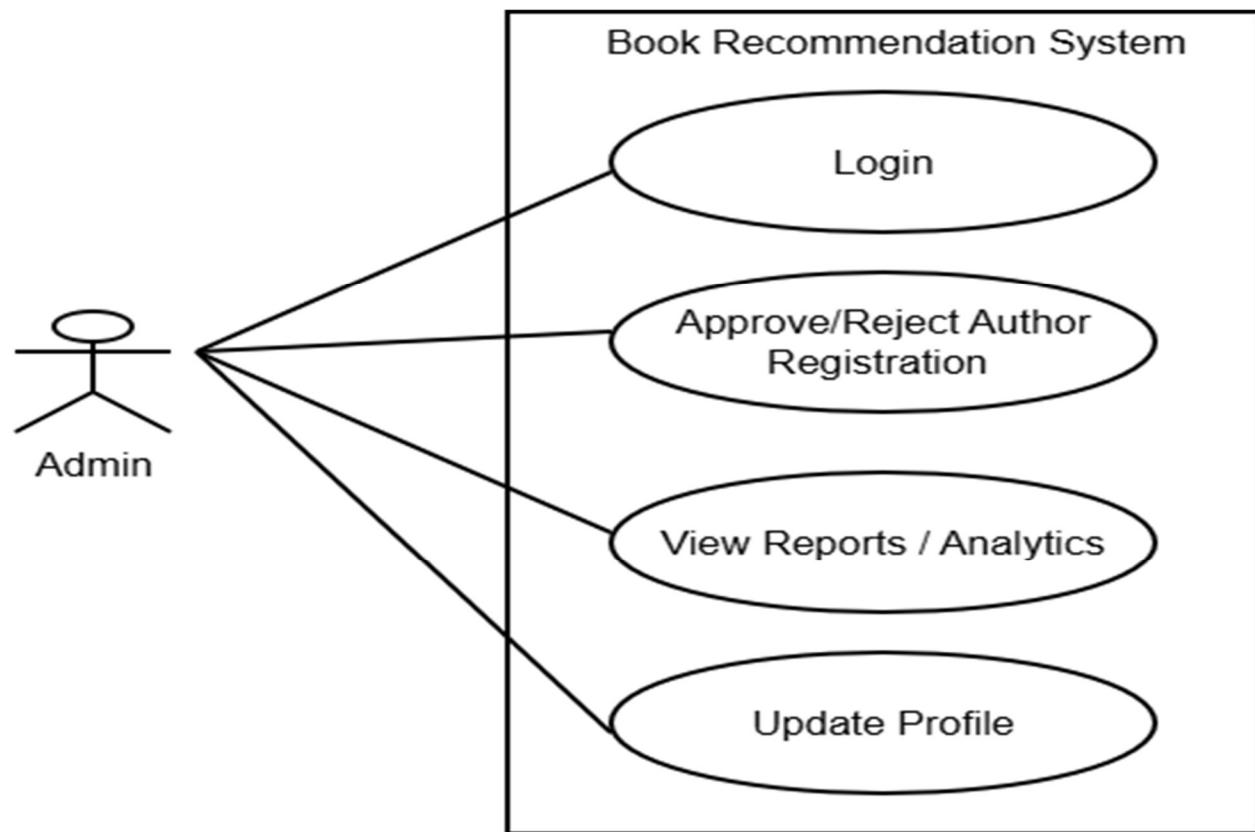
2. Reader

Readers are end users who browse and search for books, receive personalized recommendations, rate and review books, and manage their own bookshelves.



3. Administrator

Administrators have complete control over the system. They approve author registrations, manage users and book data, and monitor analytics related to user activity and popular books.



Requirement Engineering

System Overview:

The Book Recommendation System is a Flask-based web application designed to provide intelligent and personalized book suggestions to users by analyzing their preferences, behavior, and interaction patterns. The system uses a modular and scalable architecture that separates the frontend, backend, recommendation engine, and database components, ensuring maintainability and future extensibility. Flask serves as the core backend framework, handling request processing, business logic, user authentication, and communication between different system modules.

At the heart of the system lies the recommendation engine, which employs two primary techniques: content-based filtering and collaborative filtering. Content-based filtering recommends books by comparing book attributes such as genre, author, keywords, and descriptions with a user's past reading history and preferences. This approach ensures that users receive recommendations closely aligned with their individual interests. Collaborative filtering, on the other hand, analyzes patterns across multiple users by identifying similarities in ratings and behavior, enabling the system to suggest books that users with similar tastes have enjoyed. By combining these two techniques, the system produces more accurate, diverse, and relevant recommendations.

The system securely stores all critical data, including user profiles, book metadata, ratings, reviews, and bookshelf information, in a relational database. This persistent data storage enables efficient retrieval, analysis, and management of information. User interactions such as searches, ratings, and reviews are continuously recorded and analyzed, allowing the recommendation engine to adapt and improve over time. This continuous learning process helps refine recommendation accuracy and enhances overall user satisfaction.

To support decision-making and system monitoring, the application includes basic visualization and analytics features. These visualizations display important metrics such as user activity trends, popular books, and overall recommendation performance. Administrators can use these insights to monitor platform usage, evaluate system effectiveness, and identify areas for improvement. Overall, the system provides a robust, user-friendly, and intelligent platform that enhances book discovery, encourages user engagement, and offers a strong foundation for future enhancements such as advanced analytics, scalability improvements, and integration with additional data sources.

Requirement Analysis and Feasibility Study:

Requirements:

- User roles: Admin, Author, and Reader
- Secure login and authentication for Admin, Author, and Reader
- Role-based access control for system operations
- Book data entry and management by Authors
- Book browsing, searching, rating, and reviewing by Readers
- Personalized book recommendation using content-based and collaborative filtering
- Personal bookshelf management with full CRUD operations
- Admin approval for Author registration
- Monitoring and management of users, books, and reviews by Admin
- Analytics and basic visualization of user activity and popular books
- User-friendly and easy-to-navigate interface

Feasibility:

Technical Feasibility

The proposed system is technically feasible as it is developed using well-established technologies such as **Flask**, **MySQL**, and standard web technologies. Content-based and collaborative filtering algorithms can be efficiently implemented using Python libraries. The required hardware and software resources are readily available and easy to maintain.

Economic Feasibility

The system is cost-effective as it uses **open-source tools and frameworks**, minimizing development and deployment costs. No expensive proprietary software or hardware is required, making it suitable for academic and small-scale commercial use.

Operational Feasibility

The system is user-friendly and supports intuitive interfaces for all user roles. Minimal training is required for authors, readers, and administrators. The system's automation of recommendations and administrative tasks improves operational efficiency.

Proposed System:

a. Objectives:

- To develop a web-based Book Recommendation System using Flask
- To provide personalized book recommendations based on user preferences and behavior
- To enable Authors to register and manage book information efficiently
- To allow Readers to browse, rate, review, and manage personal bookshelves
- To ensure administrative control for approving Authors and monitoring system activities
- To enhance book discovery through continuous learning from user interaction data

b. Hardware and Software Platforms:

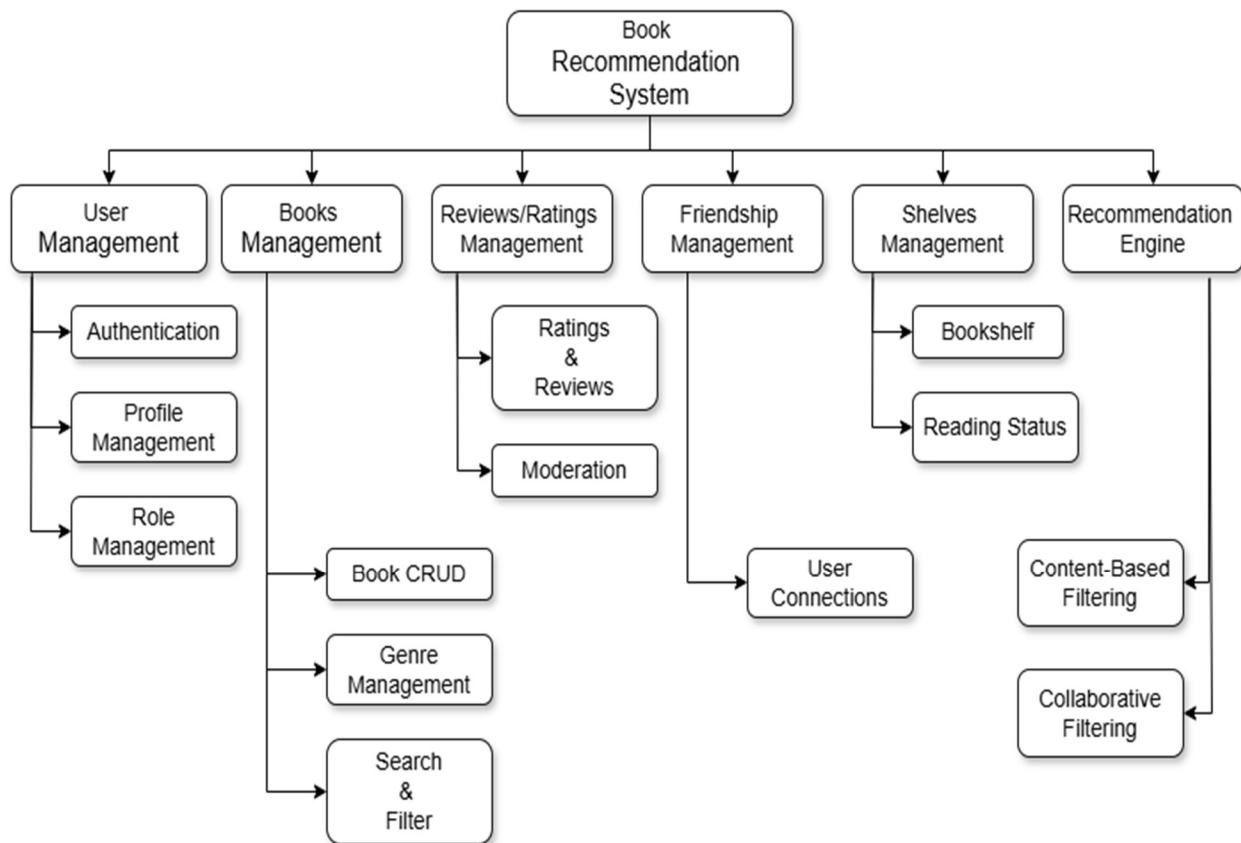
Minimum Hardware Requirements:

- Processor: Intel i3 or higher
- RAM: 4 GB (8 GB recommended)
- Storage: 100 GB or more

Software Requirements:

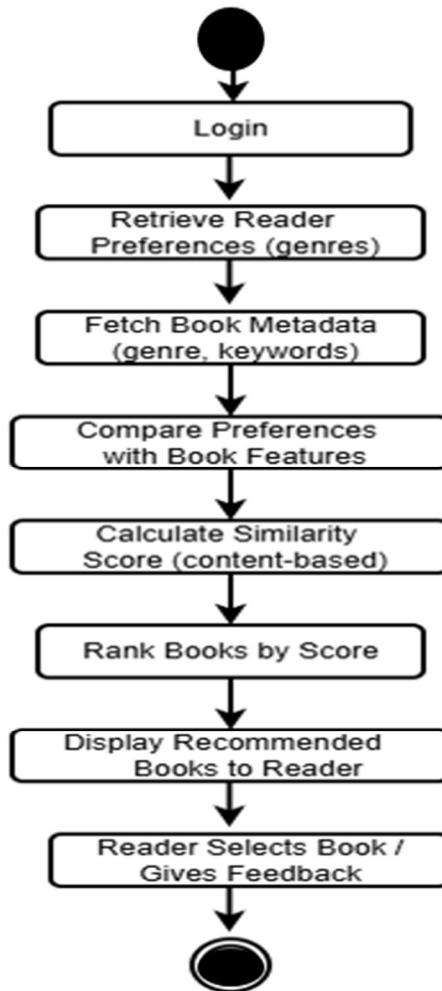
- Operating System: Windows 10 / 11 or Linux
- Backend Framework: Flask (Python)
- Frontend Technologies: HTML, CSS, JavaScript
- Development Tools: VS Code / PyCharm
- Web Browser: Google Chrome, Firefox, or Edge

Module Hierarchy

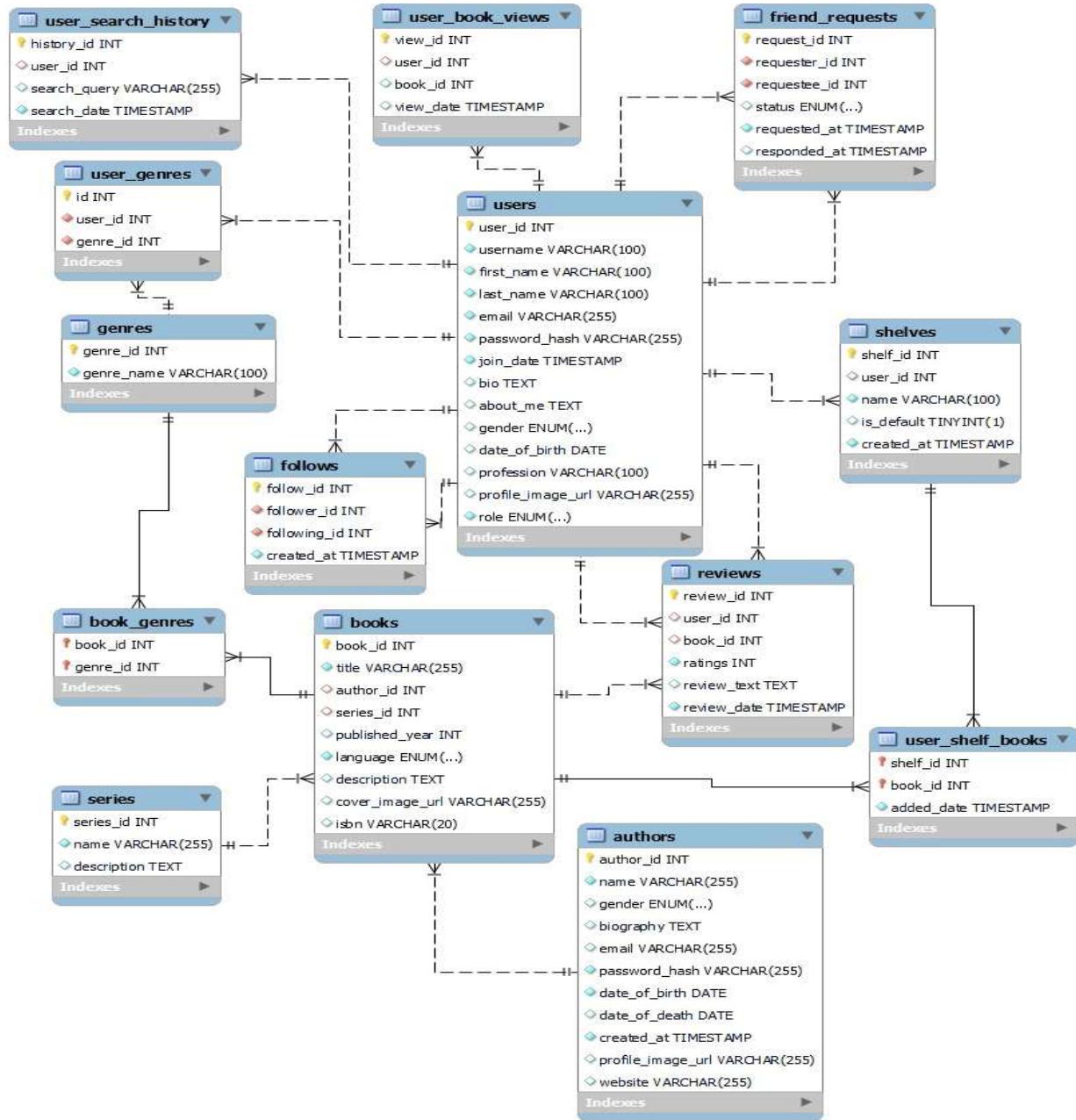


Activity Diagram

Content-Based Recommendation (Genre / Interest)



Database Design



Data Dictionary

User Table

Column Name	Data Type	Size/Limit	Constraints	Description
user_id	INT	11	NOT NULL	Unique identifier for each user (should be primary key).
username	VARCHAR	100	NOT NULL	Unique username chosen by the user (should be unique).
first_name	VARCHAR	100	NOT NULL	User's first name.
last_name	VARCHAR	100	NOT NULL	User's last name.
email	VARCHAR	255	NOT NULL	User's email address (should be unique).
password_hash	VARCHAR	255	NOT NULL	Securely stored hashed password.
join_date	TIMESTAMP	N/A	NOT NULL, default: CURRENT_TIMESTAMP	Date and time when the user registered.
bio	TEXT	N/A	NULL allowed	Short biography of the user.
about_me	TEXT	N/A	NULL allowed	Detailed personal description.
gender	ENUM	Fixed set	NULL allowed (Male, Female, Other)	Gender of the user (optional).
date_of_birth	DATE	N/A	NULL allowed	User's date of birth.
profession	VARCHAR	100	NULL allowed	User's profession or occupation.
profile_image_url	VARCHAR	255	NULL allowed	URL of the user's profile image.
role	ENUM	Fixed set	NOT NULL, default 'Reader' (Admin, Reader)	Role assigned to the user in the system.

Authors Table

Column Name	Data Type	Size/Limit	Constraints	Description
author_id	INT	11	NOT NULL	Unique identifier for each author (should be primary key).
name	VARCHAR	255	NOT NULL	Full name of the author.
gender	ENUM	Fixed set	NULL allowed (Male, Female, Other)	Gender of the author (optional).
biography	TEXT	N/A	NULL allowed	Detailed biography or background of the author.
email	VARCHAR	255	NULL allowed	Author's email address (recommended to be unique).
password_hash	VARCHAR	255	NOT NULL	Securely stored hashed password for author login.
date_of_birth	DATE	N/A	NOT NULL	Birth date of the author.
date_of_death	DATE	N/A	NULL allowed	Date of death, if applicable.
created_at	TIMESTAMP	N/A	NOT NULL, default: CURRENT_TIMESTAMP	Date and time when the author profile was created.
profile_image_url	VARCHAR	255	NULL allowed	URL to the author's profile image.

Books Table

Column Name	Data Type	Size/Limit	Constraints	Description
book_id	INT	11	NOT NULL	Unique identifier for each book (should be primary key).
title	VARCHAR	255	NOT NULL	Title of the book.
author_id	INT	11	NULL allowed	References the author of the book; foreign key to authors.author_id.
series_id	INT	11	NULL allowed	References the series the book belongs to, if any.
published_year	INT	11	NULL allowed	Year in which the book was published.
language	ENUM	Fixed set	NOT NULL (English, Hindi, Gujarati, Marathi)	Language of the book.
description	TEXT	N/A	NULL allowed	Brief summary or description of the book.
cover_image_url	VARCHAR	255	NULL allowed	URL of the book's cover image.
isbn	VARCHAR	20	NULL allowed	International Standard Book Number for the book.

Book_genres Table

Column Name	Data Type	Size/Limit	Constraints	Description
book_id	INT	11	NOT NULL	References the book; foreign key to books.book_id.
genre_id	INT	11	NOT NULL	References the genre; foreign key to genres.genre_id.

Follows Table

Column Name	Data Type	Size/Limit	Constraints	Description
follow_id	INT	11	NOT NULL	Unique identifier for each follow record (should be primary key).
follower_id	INT	11	NOT NULL	User who follows another user; references users.user_id.
following_id	INT	11	NOT NULL	User being followed; references users.user_id.
created_at	TIMESTAMP	N/A	NOT NULL, default: CURRENT_TIMESTAMP	Date and time when the follow action occurred.

Friend_requests Table

Column Name	Data Type	Size/Limit	Constraints	Description
request_id	INT	11	NOT NULL	Unique identifier for each friend request (should be primary key).
requester_id	INT	11	NOT NULL	User who sends the friend request; references users.user_id.
requestee_id	INT	11	NOT NULL	User who receives the friend request; references users.user_id.
status	ENUM	Fixed set	Default 'pending' (pending, accepted, rejected)	Current status of the friend request.
requested_at	TIMESTAMP	N/A	NOT NULL, default: CURRENT_TIMESTAMP	Date and time when the request was created.
responded_at	TIMESTAMP	N/A	NULL allowed	Date and time when the request was accepted or rejected.

Genres Table

Column Name	Data Type	Size/Limit	Constraints	Description
genre_id	INT	11	NOT NULL	Unique identifier for each genre (should be primary key).
genre_name	VARCHAR	100	NOT NULL	Name of the genre (e.g., Fiction, Romance, Science).

Reviews Table

Column Name	Data Type	Size/Limit	Constraints	Description
review_id	INT	11	NOT NULL	Unique identifier for each review (should be primary key).
user_id	INT	11	NULL allowed	User who wrote the review; foreign key to users.user_id.
book_id	INT	11	NULL allowed	Book being reviewed; foreign key to books.book_id.
ratings	INT	1	NOT NULL	Rating given to the book (typically 1–5).
review_text	TEXT	N/A	NULL allowed	User's written feedback or comments on the book.
review_date	TIMESTAMP	N/A	NOT NULL, default: CURRENT_TIMESTAMP	Date and time when the review was submitted.

Series Table

Column Name	Data Type	Size/Limit	Constraints	Description
series_id	INT	11	NOT NULL	Unique identifier for each book series (should be primary key).
name	VARCHAR	255	NOT NULL	Name or title of the book series.
description	TEXT	N/A	NULL allowed	Detailed description or overview of the series.

Shelves Table

Column Name	Data Type	Size/Limit	Constraints	Description
shelf_id	INT	11	NOT NULL	Unique identifier for each shelf (should be primary key).
user_id	INT	11	NULL allowed	User who owns the shelf; foreign key to users.user_id.
name	VARCHAR	100	NOT NULL	Name of the shelf (e.g., Read, Favorites, Wishlist).
is_default	TINYINT	1	Default 0	Indicates whether the shelf is a default shelf (1 = yes, 0 = no).
created_at	TIMESTAMP	N/A	NOT NULL, default: CURRENT_TIMESTAMP	Date and time when the shelf was created.

User_genres Table

Column Name	Data Type	Size/Limit	Constraints	Description
id	INT	11	NOT NULL	Unique identifier for each user–genre preference record (should be primary key).
user_id	INT	11	NOT NULL	References the user; foreign key to users.user_id.
genre_id	INT	11	NOT NULL	References the genre; foreign key to genres.genre_id.

User_search_history Table

Column Name	Data Type	Size/Limit	Constraints	Description
history_id	INT	11	NOT NULL	Unique identifier for each search record (should be primary key).
user_id	INT	11	NULL allowed	User who performed the search; foreign key to users.user_id.
search_query	VARCHAR	255	NULL allowed	Search keywords entered by the user.
search_date	TIMESTAMP	N/A	NOT NULL, default: CURRENT_TIMESTAMP	Date and time when the search was performed.

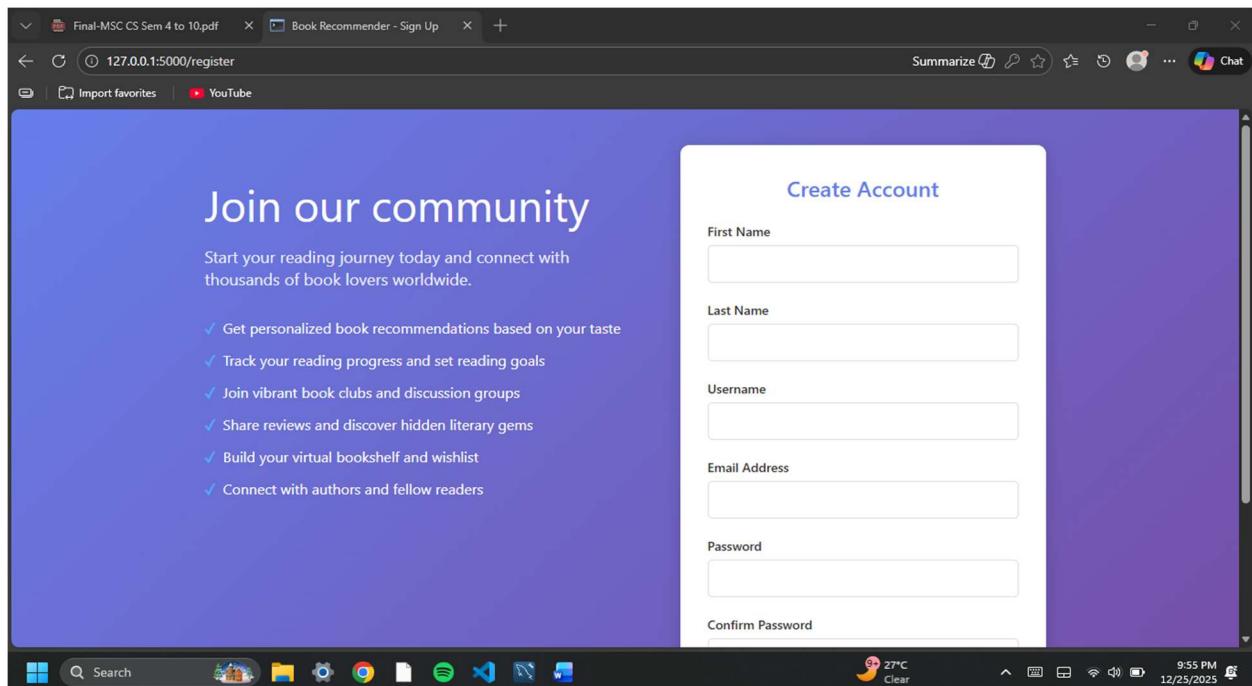
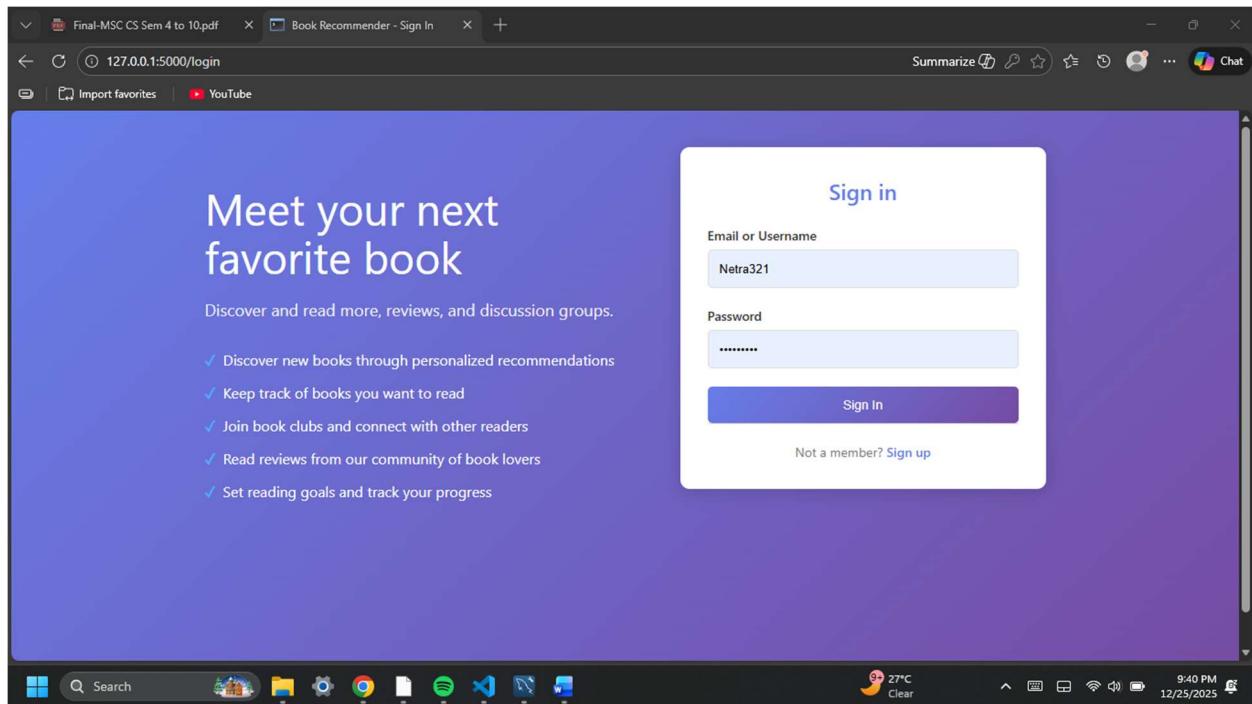
User_book_views Table

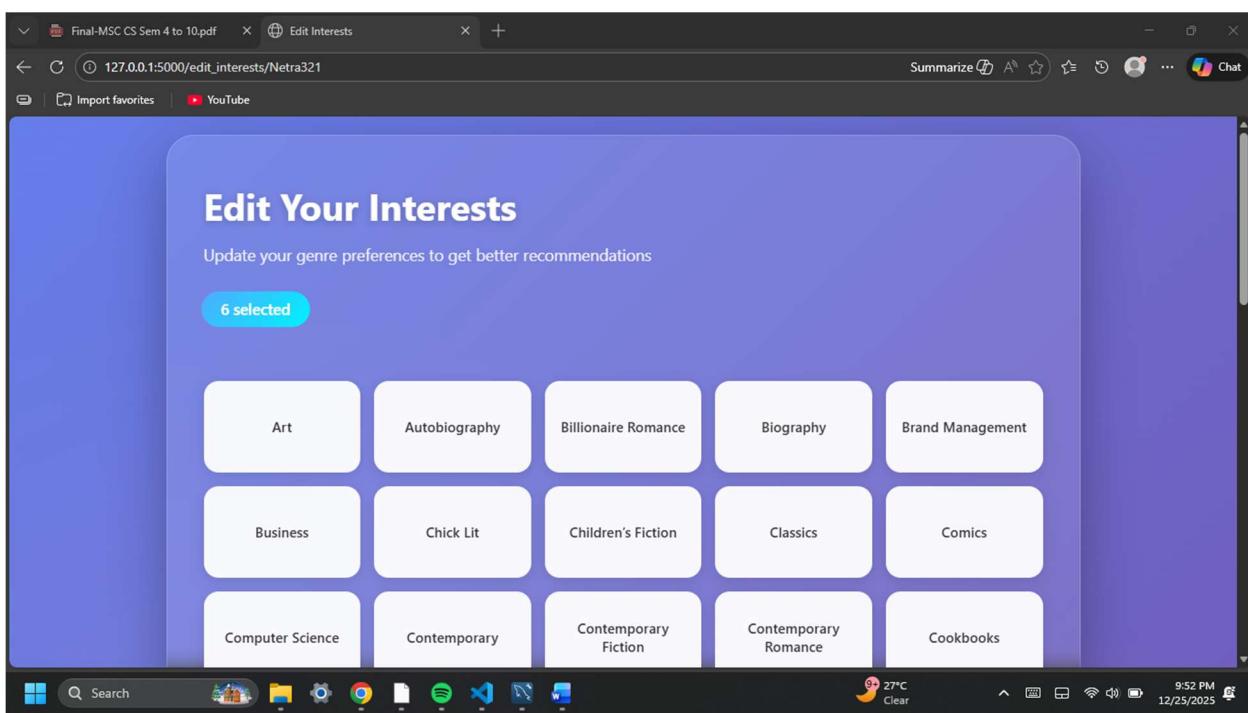
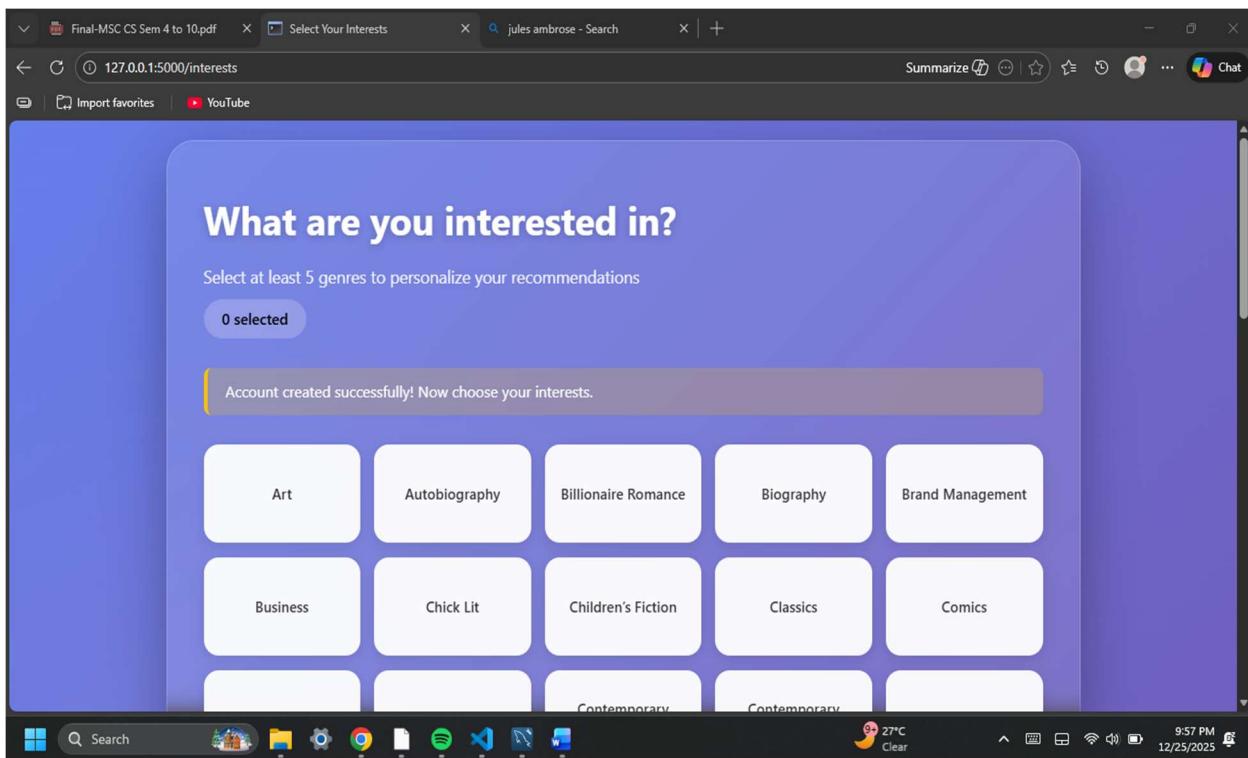
Column Name	Data Type	Size/Limit	Constraints	Description
view_id	INT	N/A	PRIMARY KEY, AUTO_INCREMENT	Unique identifier for each book view record.
user_id	INT	N/A	NULL allowed	User who viewed the book; references users.user_id.
book_id	INT	N/A	NULL allowed	Book that was viewed; references books.book_id.
view_date	TIMESTAMP	N/A	Default: CURRENT_TIMESTAMP	Date and time when the book was viewed.

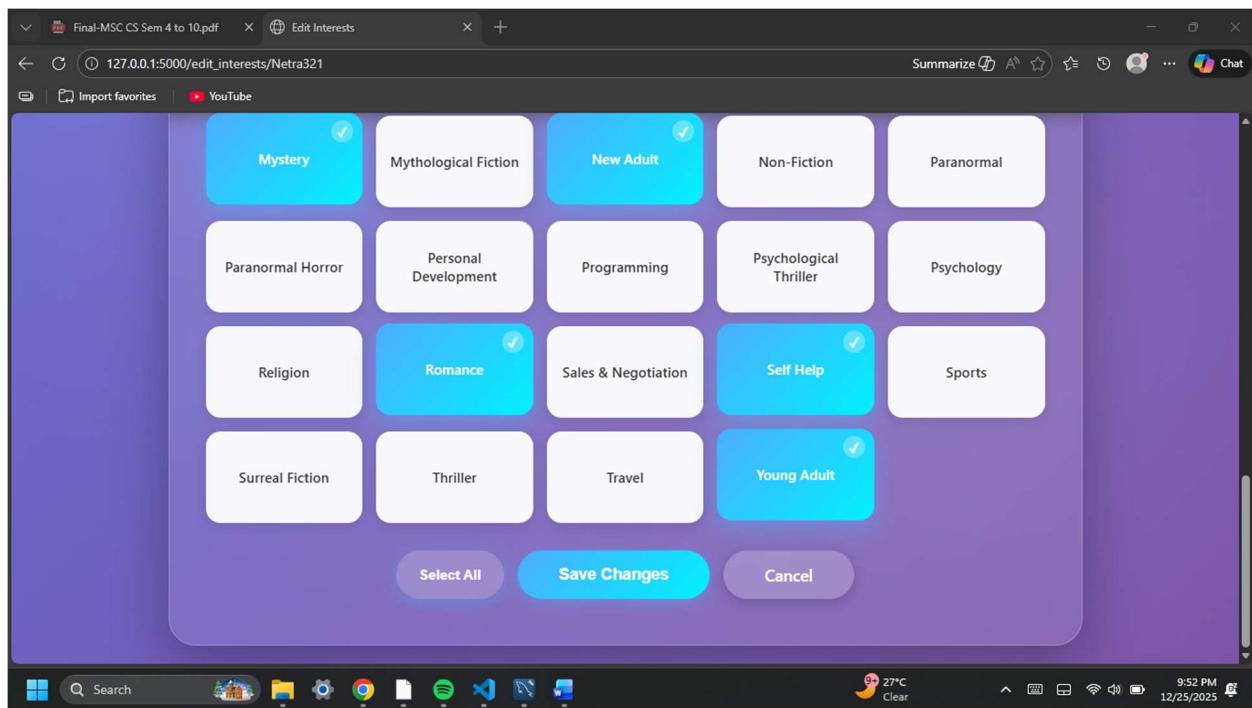
User_shelf_books Table

Column Name	Data Type	Size/Limit	Constraints	Description
shelf_id	INT	11	NOT NULL, Foreign Key	Unique identifier of the shelf; references shelves.shelf_id.
book_id	INT	11	NOT NULL, Foreign Key	Unique identifier of the book; references books.book_id.
added_date	TIMESTAMP	—	Default: CURRENT_TIMESTAMP	Date and time when the book was added to the shelf.

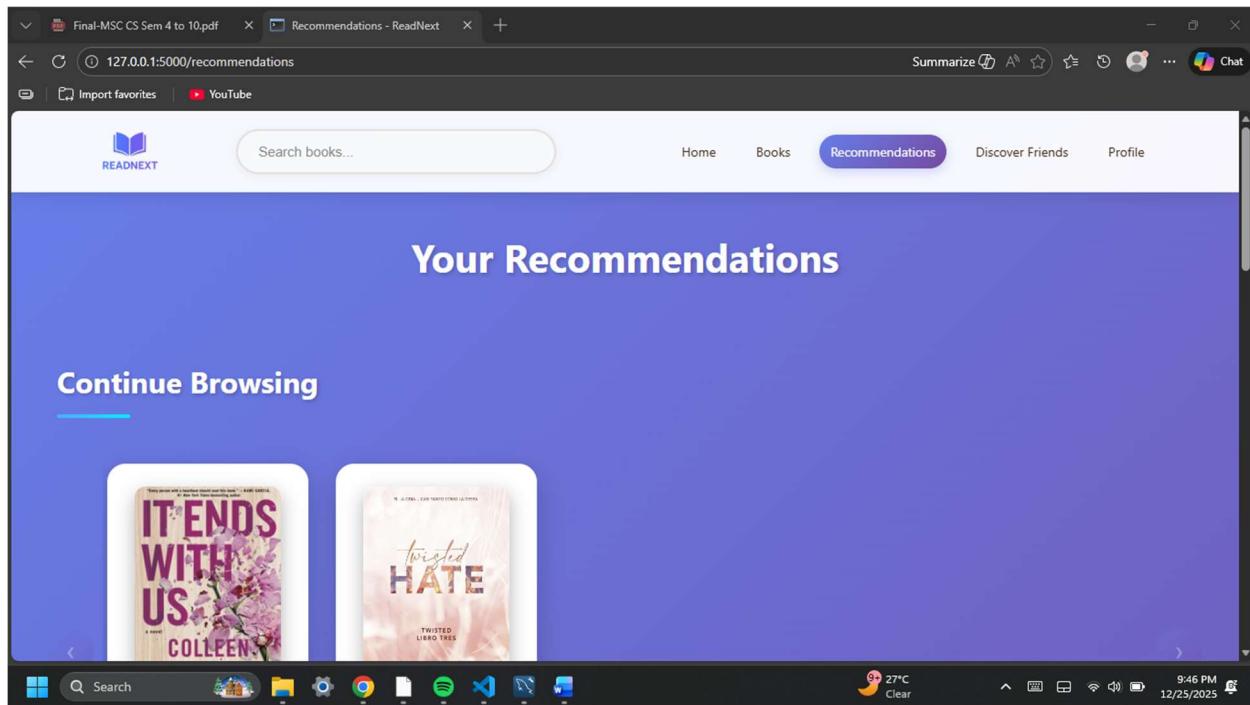
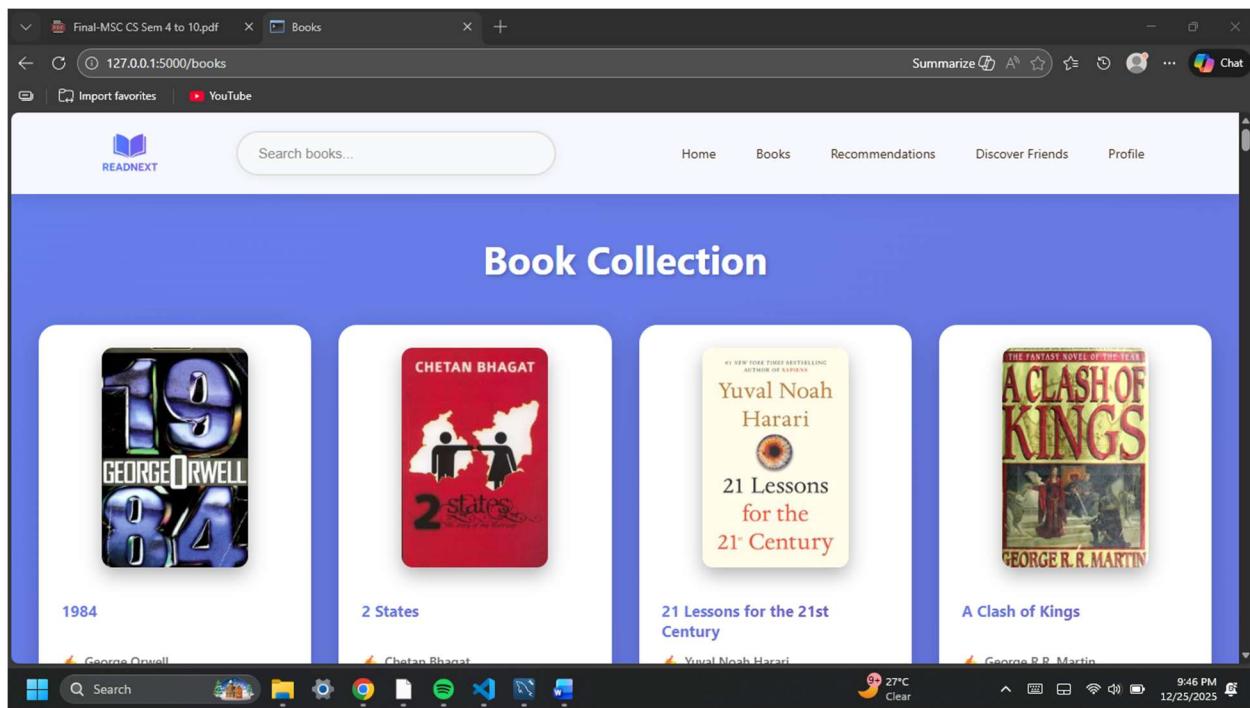
Implementation







A screenshot of the ReadNext - Your Personal Reading website. The header includes a search bar labeled "Search books...", navigation links for "Home", "Books", "Recommendations", "Discover Friends", and "Profile", and a weather widget showing "27°C Clear". The main section features a large blue banner with the text "Discover Your Next Great Read" and a subtitle "Personalized book recommendations powered by your unique reading preferences and our intelligent algorithm." Below the banner are four callout boxes: "Personalized recommendations based on your reading history", "Advanced search across multiple books", "Detailed reviews and ratings from fellow readers", and "Track your reading progress and goals". To the right, there is a "Find Your Perfect Book" sidebar with a search bar and a list of genres: Fiction, Mystery, Romance, Sci-Fi, Biography, History, Fantasy, and Self-Help. A large blue button at the bottom of the sidebar says "Discover Books". The background of the main content area is purple.



Screenshot of the ReadNext web application showing recommendations based on genres.

The page title is "Recommendations - ReadNext".

The main heading is "Based on Your Genres".

Five book cards are displayed:

- Twisted Love** by Ana Huang
- The Da Vinci Code** by Dan Brown
- Feluda Samagra** by Satyajit Ray
- And Then There Were None** by Agatha Christie
- Murder on the Orient Express** by Agatha Christie

The footer shows the URL 127.0.0.1:5000/book/8.

Screenshot of the ReadNext web application showing recommendations based on searches.

The page title is "Recommendations - ReadNext".

The main heading is "Based on Your Searches".

Five book cards are displayed:

- Pride and Prejudice** by Jane Austen
- Twisted Love** by Ana Huang
- It Ends with Us** by Colleen Hoover
- A Court of Thorns and Roses** by Sarah J. Maas
- I Too Had a Love Story** by Ravinder Singh

The footer shows the URL 127.0.0.1:5000/recommendations.

The screenshot shows a Windows desktop environment with a Microsoft Edge browser window open. The URL in the address bar is `127.0.0.1:5000/book/25`. The page displays the book cover for "It Ends with Us" by Colleen Hoover. The cover features the title in large purple letters against a background of pink flowers. Below the title, it says "a novel" and "COLLEEN HOOVER". At the bottom, it says "#1 NEW YORK TIMES BESTSELLING AUTHOR". To the right of the cover, the book's title "It Ends with Us" is displayed in large purple letters, followed by "by Colleen Hoover". Below this, there are four purple rectangular boxes containing metadata: "SERIES Standalone", "GENRES Fiction, Romance", "LANGUAGE English", and "PUBLISHED 2016". A blue "Add to Library" button is located at the bottom left of this section. The browser's top navigation bar includes tabs for "Final-MSCSem 4 to 10.pdf" and "It Ends with Us - ReadNext". The Windows taskbar at the bottom shows various pinned icons and the date/time as 12/25/2025.

This screenshot shows the same Windows desktop environment and Microsoft Edge browser setup as the previous one. The URL in the address bar is now `127.0.0.1:5000/book/24`. The page displays the book cover for "Twisted Lies" by Ana Huang. The cover has a blue and white abstract design with the text "TWISTED BOOK ONE" and "USA TODAY BESTSELLING AUTHOR ANA HUANG". To the right of the cover, the book's title "Twisted Lies" is displayed in large blue letters, followed by "by Ana Huang". Below this, there are two purple rectangular boxes containing metadata: "LANGUAGE English" and "PUBLISHED 2021". A blue "Add to Library" button is located at the bottom left. A modal dialog box is open, prompting the user to "Select Shelf:" with a dropdown menu showing "Currently Reading". Below this, there is a "Create New Shelf:" input field with the placeholder "New shelf name..." and a blue "Add" button. A preview of the book's plot summary is visible in the background. The browser's top navigation bar includes tabs for "Final-MSCSem 4 to 10.pdf", "Twisted Lies - ReadNext", "Twisted Love - ReadNext", and "New tab". The Windows taskbar at the bottom shows various pinned icons and the date/time as 12/25/2025.

The screenshot shows a user profile for 'Netra patellll' (Netra321). The profile header includes the user's name, handle (@Netra321), and a circular profile picture. It also displays '0 Friends'. A purple 'Settings' button is located in the top right corner of the profile box. Below the profile box, there are three tabs: 'About' (which is selected), 'Friends (0)', and 'Reviews (0)'. Under the 'About' tab, there is a 'Bio' section with the text 'a book lover....', an 'About Me' section with 'No about me added yet.', and a 'Member Since' section showing 'Member Since'. To the right of the 'About' tab, there is a 'Library' section titled 'collen books' featuring a thumbnail for 'IT LIES WITH US'. The desktop taskbar at the bottom shows various pinned icons and the system tray.

The screenshot shows a user profile for 'Jules@123'. The profile header includes the user's name, handle (@Jules@123), and a circular profile picture. There is no visible profile picture. Below the profile box, there are three tabs: 'About' (selected), 'Friends (0)', and 'Reviews (0)'. Under the 'About' tab, there is a 'Bio' section with 'No bio added yet.', an 'About Me' section with 'No about me added yet.', and a 'Member Since' section showing 'December 2025'. To the right of the 'About' tab, there is a 'Library' section titled 'Currently Reading' featuring a thumbnail for 'Twisted Games'. Below it, there is a 'Read' section showing two book covers: 'twisted LIES' and 'twisted LOVE', each with a 'Remove' button. The desktop taskbar at the bottom shows various pinned icons and the system tray.

Screenshot of Netra321's profile on ReadNext. The interface includes a search bar, navigation links for Home, Books, Recommendations, Discover Friends, and Profile. On the left, there's a sidebar with "About Me" and "Member Since" sections. The main area displays book collections under "collen books" and "romance".

a book lover....

About Me

No about me added yet.

Member Since

October 2025

collen books

romance

Remove

Remove

27°C Clear 9:51 PM 12/25/2025

Screenshot of a book review page for "Train to Pakistan" on ReadNext. The page features a "Reviews & Ratings" section showing a rating of 3.0 from one review. It includes a form for writing a new review and a detailed review by "JayP" dated Nov 25, 2025.

Reviews & Ratings

★ 3.0 (1 REVIEW)

Write a Review

Your Rating *

Choose your rating...

Your Review (optional)

Post Review

JayP Nov 25, 2025

★★★★★ 3 / 5

A poignant story set during Partition, but the emotional connection felt a bit limited for me. Khushwant Singh captures the chaos and brutality of the time very realistically, and the setting is incredibly vivid. However, I couldn't fully connect with the characters, and some parts felt slow. A good, important read — just not a personal favourite.

27°C Clear 9:54 PM 12/25/2025

The screenshot shows a Windows desktop with a browser window open to the ReadNext website. The address bar shows the URL 127.0.0.1:5000/book/91. The page displays reviews for the book "Twisted Lies" by Ana Huang. At the top right, a star rating of **4.5 (2 REVIEWS)** is shown. Below this, there is a form titled "Update Your Review" with fields for "Your Rating" (set to 4 Stars) and "Your Review" (containing a sample review text). To the right, two reviews are listed: one from "Jules@123" dated Dec 25, 2025, and another from "maitri63" dated Nov 25, 2025. The Windows taskbar at the bottom shows various pinned icons and the date/time as 12/25/2025.

This screenshot shows the same Windows desktop setup as the previous one, but the browser window is now displaying the profile page for "Jules@123". The address bar shows the URL 127.0.0.1:5000/profile/Jules@123. The page lists the user's reviews. The first review is for the book "Twisted Lies" with a rating of 4/5, and the second is for "Twisted Love" with a rating of 5/5. Both reviews include sample text and the date Dec 25, 2025. The Windows taskbar at the bottom shows the date/time as 12/25/2025.

Final-MSC CS Sem 4 to 10.pdf

Netra321's Profile | NextRead

127.0.0.1:5000/profile/Netra321

Import favorites | YouTube

Summarize Chat

READNEXT

Search books...

Home Books Recommendations

Netra patellll
@Netra321
0 Friends

About Friends (0) Reviews (0)

Bio
a book lover....

About Me
No about me added yet.

Member Since

Library
collen books

IT LIVED WITH US

Settings

Edit Profile

Edit Interests (Genres)

Logout

9:51 PM 27°C Clear 12/25/2025

Final-MSC CS Sem 4 to 10.pdf

Edit Profile - Netra321

127.0.0.1:5000/edit_profile/Netra321

Import favorites | YouTube

Summarize Chat

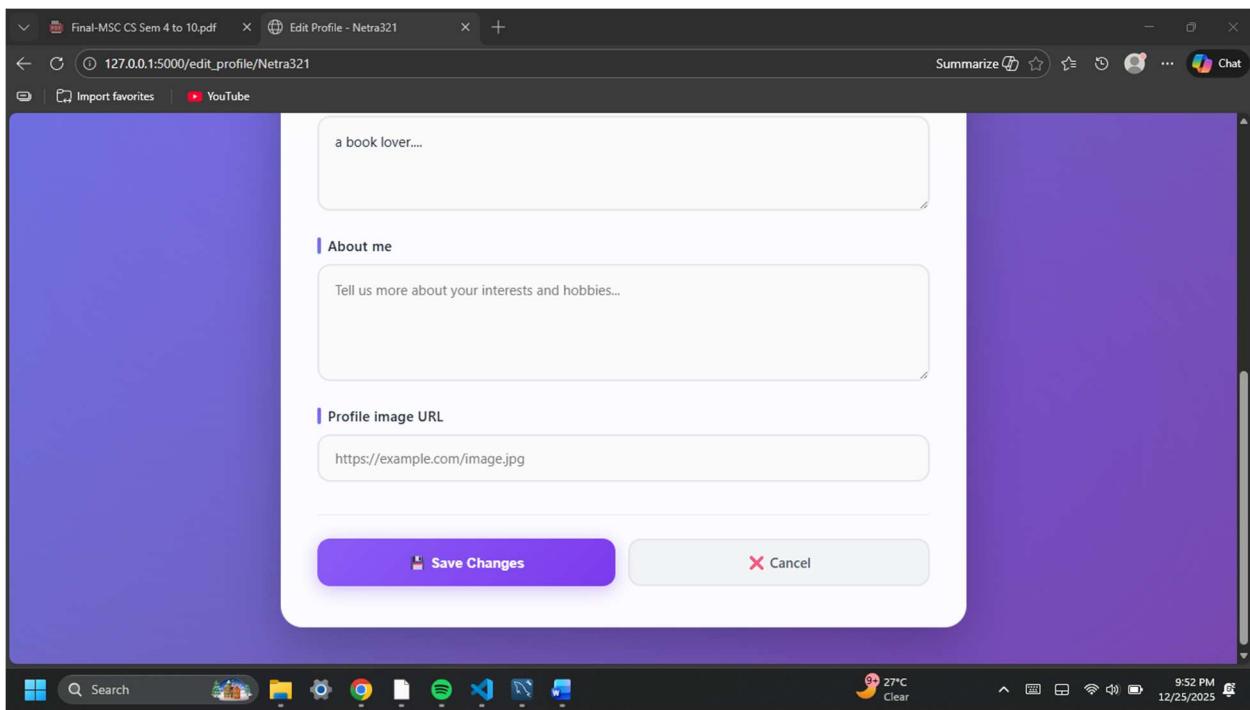
Search

First name
Netra

Last name
patellll

Bio
a book lover....

9:51 PM 27°C Clear 12/25/2025



A screenshot of a web browser window showing a social networking platform for book lovers. The title bar says "Twisted Lies - ReadNext". The URL in the address bar is "127.0.0.1:5000/find_users". The page features sections for "Find Readers" (with a search bar and "15 Readers on NextRead" count), "Pending Friend Requests" (listing "Ava Chen" with "Accept" and "Reject" buttons), and "People You May Know" (listing users like "Aman Mistri", "Deep Kotak", "Ava Chen", and "Gautam Chauhan" with "Add Friend" buttons). The interface has a purple and white color scheme.

A screenshot of a web browser showing a user profile page for "Jules amrose". The browser has four tabs open: "Final-MSC CS Sem 4 to 10.pdf", "Twisted Lies - ReadNext", "Jules@123's Profile | NextRead", and "New tab". The main content area shows the user's profile picture, name, handle (@Jules@123), and friends count (2 Friends). Below this, there are tabs for "About", "Friends (2)", and "Reviews (2)". Under the "Friends" tab, two friends are listed: "Netra patellll" (@Netra321) and "Ava Chen" (@ava@123). The bottom of the screen shows a Windows taskbar with various icons and the system tray indicating the date and time as 12/25/2025.

A screenshot of a web browser showing an admin dashboard for "Books Manager". The browser has four tabs open: "Final-MSC CS Sem 4 to 10.pdf", "Twisted Lies - ReadNext", "Admin Dashboard - Books Manager", and "New tab". The main content area features a "Dashboard" section with four summary boxes: "Total Books" (102), "Total Authors" (66), "Total Users" (16), and "Total Genres" (59). Below this is a "Manage Books" section with a search bar, a table header for "ID", "Title", "Author", "Year", "Language", and "Actions", and a button to "+ Add New Book". The bottom of the screen shows a Windows taskbar with various icons and the system tray indicating the date and time as 12/25/2025.

Add New Book

← Back to Dashboard

Book Information

Fill in the details about your book. Fields marked with * are required.

Basic Information

Book Title *

Published Year *

Language *

ISBN (Optional)

Series (Optional)

27°C Clear

Cover Image URL (Optional)

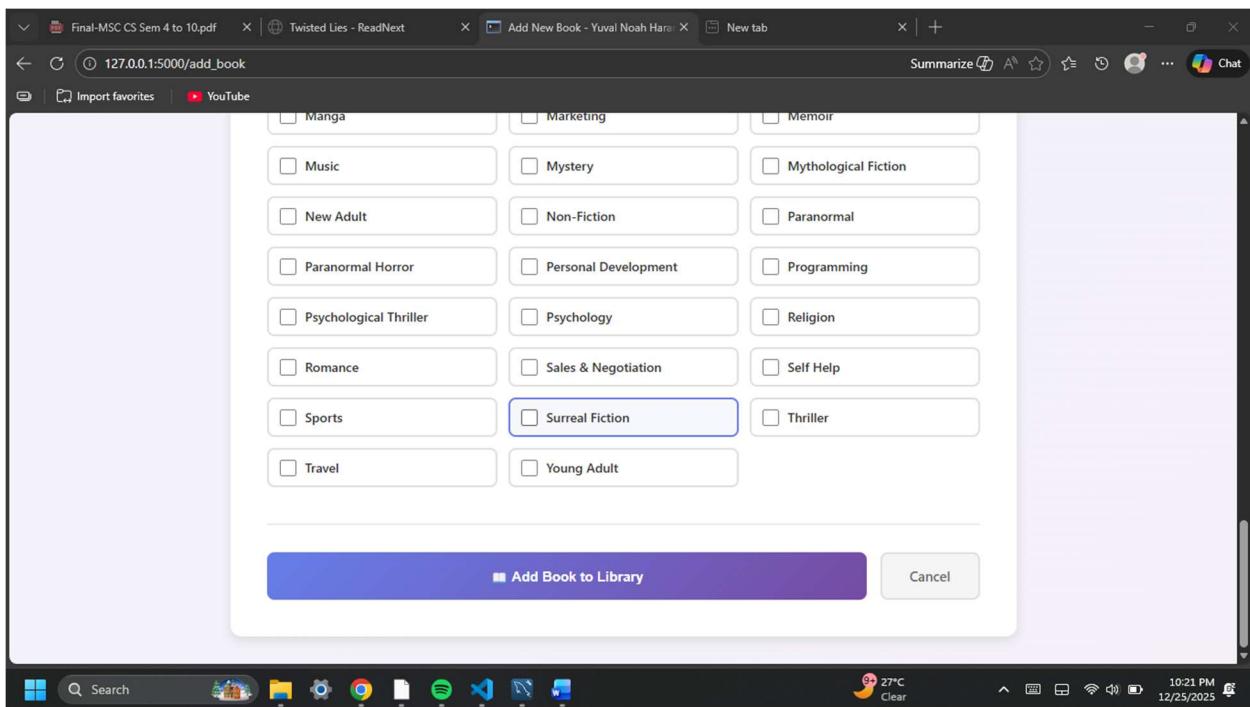
Paste a direct link to your book's cover image

Genres

Select Genres * (Choose at least one)

<input type="checkbox"/> Art	<input type="checkbox"/> Autobiography	<input type="checkbox"/> Billionaire Romance
<input type="checkbox"/> Biography	<input type="checkbox"/> Brand Management	<input type="checkbox"/> Business
<input type="checkbox"/> Chick Lit	<input type="checkbox"/> Children's Fiction	<input type="checkbox"/> Classics
<input type="checkbox"/> Comics	<input type="checkbox"/> Computer Science	<input type="checkbox"/> Contemporary
<input type="checkbox"/> Contemporary Fiction	<input type="checkbox"/> Contemporary Romance	<input type="checkbox"/> Cookbooks
<input type="checkbox"/> Crime Thriller	<input type="checkbox"/> Dark Romance	<input type="checkbox"/> Data Science
<input type="checkbox"/> Database Systems	<input type="checkbox"/> Enemies to Lovers	<input type="checkbox"/> Entrepreneurship

27°C Clear



A screenshot of a web browser window displaying the 'Admin Dashboard - Books Manager' page. The page has a header titled 'Manage Books' with a search bar and a '+ Add New Book' button. Below the header is a table listing seven books. The columns are: ID, Title, Author, Year, Language, and Actions. Each row contains an 'Edit' and a 'Delete' button. The books listed are:

ID	Title	Author	Year	Language	Actions
1	Godaan	Premchand	1936	Hindi	<button>Edit</button> <button>Delete</button>
2	Harry Potter and the Philosopher's Stone	J.K. Rowling	1997	English	<button>Edit</button> <button>Delete</button>
3	Yayati	Vishnu Sakharam Khandekar	1959	Marathi	<button>Edit</button> <button>Delete</button>
4	Sapiens: A Brief History of Humankind	Yuval Noah Harari	2011	English	<button>Edit</button> <button>Delete</button>
5	India After Gandhi	Ramachandra Guha	2007	English	<button>Edit</button> <button>Delete</button>
6	Pride and Prejudice	Jane Austen	1813	English	<button>Edit</button> <button>Delete</button>
7	The Da Vinci Code	Dan Brown	2003	English	<button>Edit</button> <button>Delete</button>

The screenshot shows a Microsoft Edge browser window with the URL 127.0.0.1:5000/admin_dashboard. The title bar says "Admin Dashboard - Books Manager". The main content area is titled "Manage Authors" with a search bar "Search author...". A table lists 9 authors with columns: ID, Name, Date of Birth, Date of Death, and Actions (Edit, Delete). The data is as follows:

ID	Name	Date of Birth	Date of Death	Actions
1	Premchand	1880-07-31	1936-10-08	Edit Delete
2	J.K. Rowling	1965-07-31	—	Edit Delete
3	Vishnu Sakharam Khandekar	1898-01-11	1976-09-02	Edit Delete
4	Yuval Noah Harari	1976-02-24	—	Edit Delete
5	Ramachandra Guha	1958-04-29	—	Edit Delete
6	Jane Austen	1775-12-16	1817-07-18	Edit Delete
7	Dan Brown	1964-06-22	—	Edit Delete
8	Satyajit Ray	1921-05-02	1992-04-23	Edit Delete
9	Robert Hughes	1938-07-28	2012-08-06	Edit Delete

The taskbar at the bottom shows various pinned icons and the date/time as 12/25/2025 10:16 PM.

The screenshot shows a Microsoft Edge browser window with the URL 127.0.0.1:5000/admin_dashboard. The title bar says "Admin Dashboard - Books Manager". The main content area is titled "Manage User" with a search bar "Search user...". A table lists 10 users with columns: ID, Username, Email, Role, and Join Date. The data is as follows:

ID	Username	Email	Role	Join Date
1	admin101	mruchita38@gmail.com	Admin	2025-11-24
2	ChauhanGautam04	chauhangautam176@gmail.com	Reader	2025-11-24
3	ruchita73	ruchi04ta@gmail.com	Reader	2025-11-24
4	netra89	netrajigneshpatel@gmail.com	Reader	2025-11-24
5	keyuri75	keyurimakwana75@gmail.com	Reader	2025-11-24
6	aman59	amanmistr45@gmail.com	Reader	2025-11-24
7	JayP	jayprajapatirr133@gmail.com	Reader	2025-11-24
8	deep72	deepmkotak1103@gmail.com	Reader	2025-11-24
9	RhythmMahale	rhythm758002@gmail.com	Reader	2025-11-24
10	maitri63	maitribhatala@gmail.com	Reader	2025-11-24

The taskbar at the bottom shows various pinned icons and the date/time as 12/25/2025 10:16 PM.

The screenshot shows a Microsoft Edge browser window with a dark theme. The address bar displays the URL `127.0.0.1:5000/admin_dashboard`. The main content area is titled "Manage Genres". Below the title is a table with two columns: "ID" and "Genre Name". The data rows are:

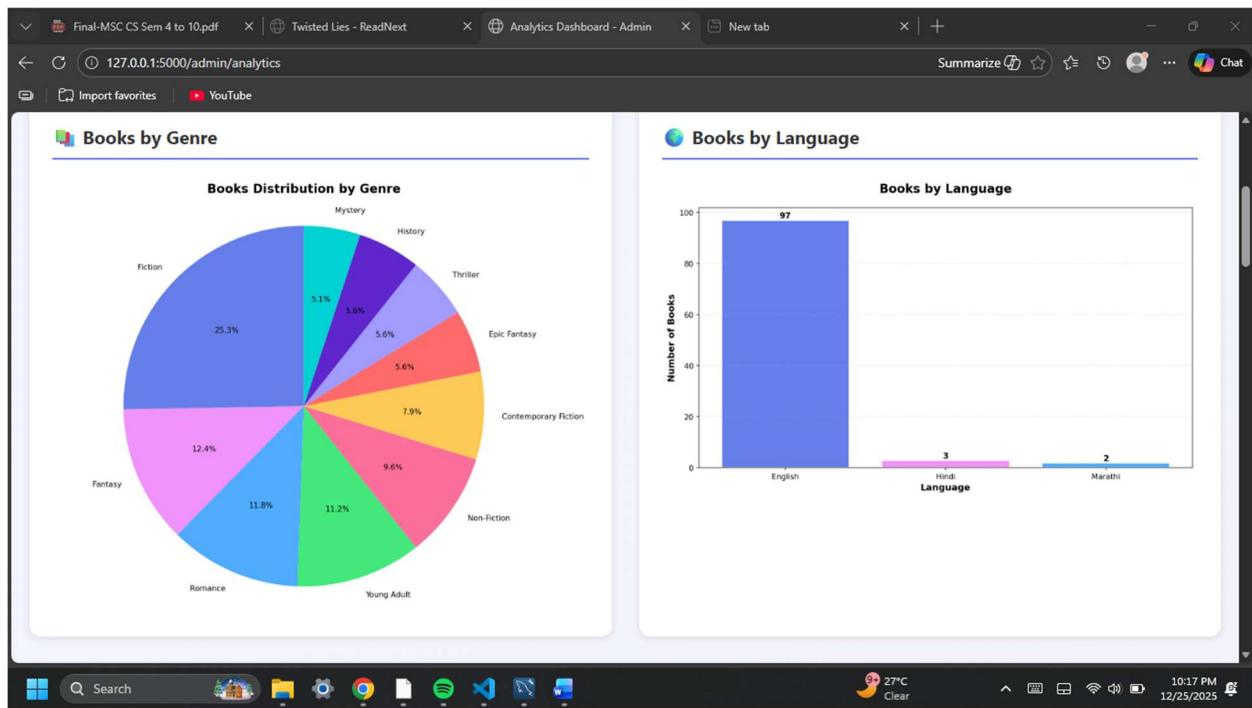
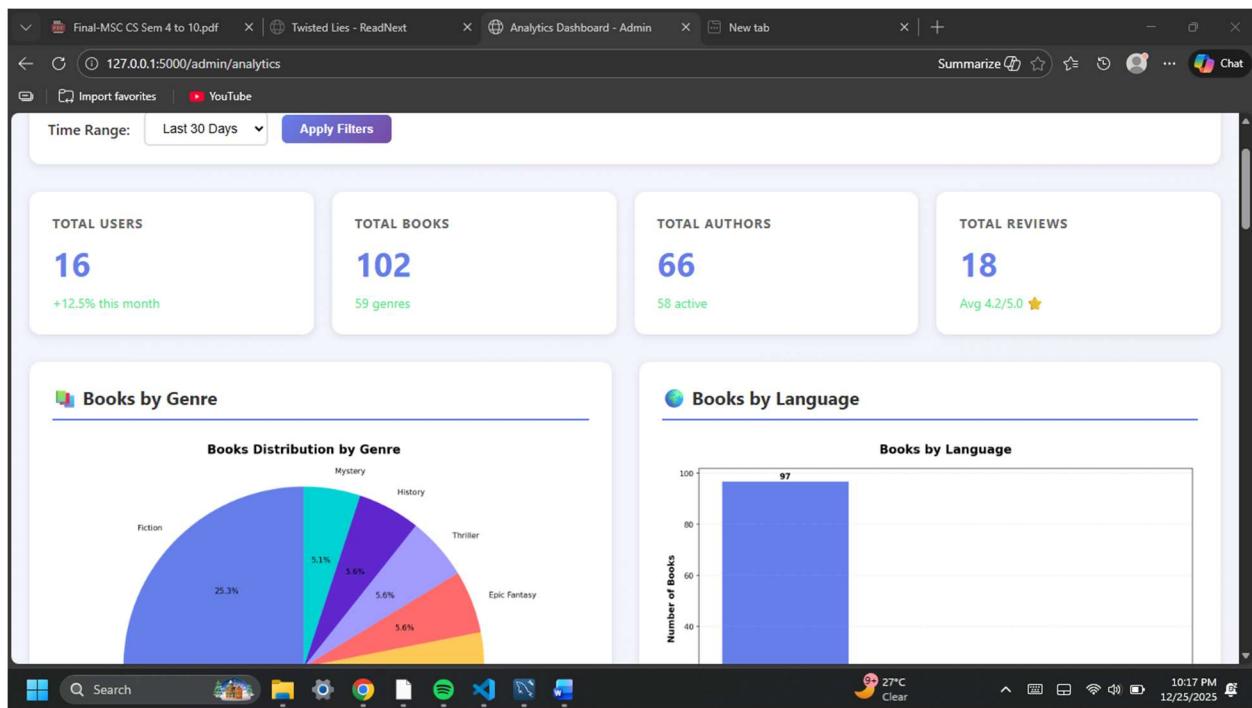
ID	Genre Name
27	Art
61	Autobiography
48	Billionaire Romance
9	Biography
54	Brand Management
29	Business
41	Chick Lit
12	Children's Fiction
30	Classics

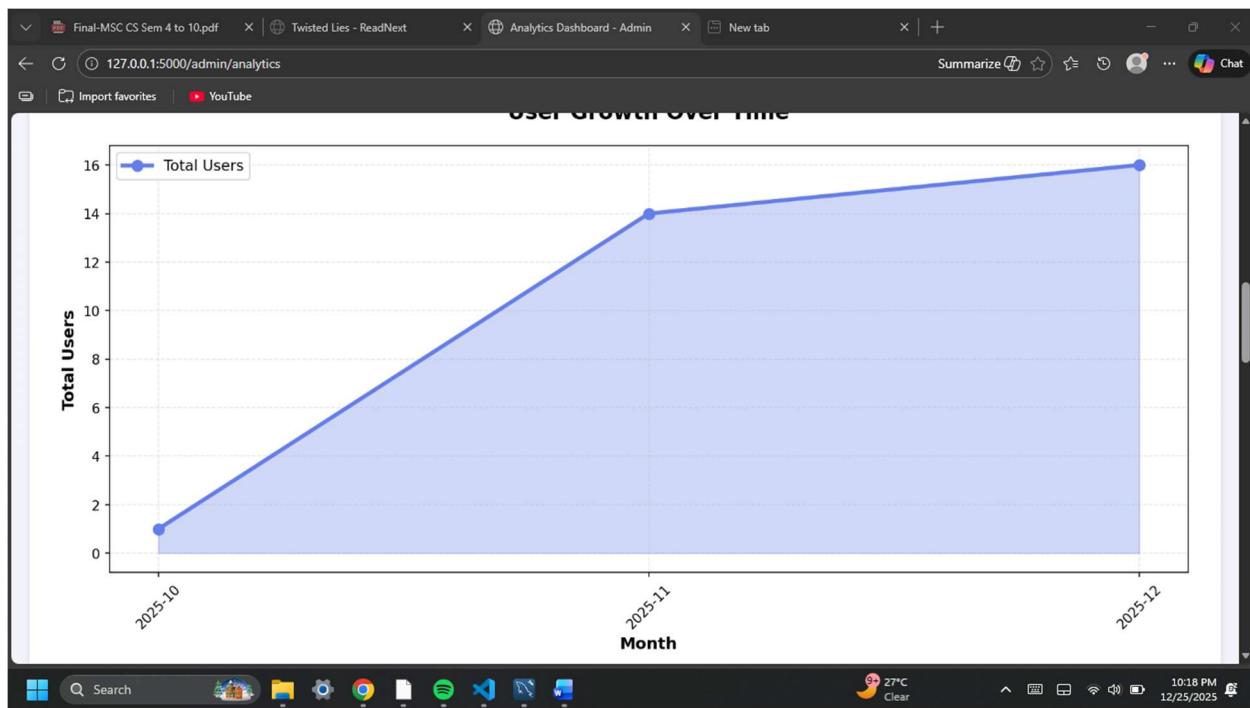
The bottom of the screen shows the Windows taskbar with various pinned icons and the system tray indicating the date and time as 12/25/2025 at 10:16 PM.

The screenshot shows a Microsoft Edge browser window with a dark theme. The address bar displays the URL `127.0.0.1:5000/admin_dashboard`. The main content area is titled "Manage Series". A search bar labeled "Search series..." is present. Below the search bar is a table with three columns: "ID", "Series Name", and "Description". The data rows are:

ID	Series Name	Description
1	Harry Potter	Fantasy series about a young wizard and his adventures at Hogwarts.
2	Game of Thrones	Epic fantasy series set in the Seven Kingdoms of Westeros.
3	Twisted	Contemporary romance series by Ana Huang.
4	Shiva Trilogy	Indian mythological fantasy series about Lord Shiva.
5	The Hunger Games	Dystopian young adult series set in Panem.
6	The Lord of the Rings	Epic high-fantasy trilogy.
7	Standalone	Books not part of a series.

The bottom of the screen shows the Windows taskbar with various pinned icons and the system tray indicating the date and time as 12/25/2025 at 10:16 PM.





Author Portal

Access your author dashboard to manage your books, connect with readers, and track your literary journey.

- ✓ View your book statistics and reader engagement
- ✓ Read and respond to reader reviews
- ✓ Track your book's performance across the platform
- ✓ Update your author biography and profile
- ✓ See trending topics and reader preferences
- ✓ Connect with your growing reader community

Author Sign In AUTHOR

Author Email Address
netrajigneshpatel@gmail.com

Password
.....

Sign In to Author Dashboard

Not an author? [Sign in as Reader](#)

Don't have an author account? [Register as Author](#)

Final-MSC CS Sem 4 to 10.pdf | Author Dashboard - Yuval Noah | +

127.0.0.1:5000/author_dashboard

Import favorites | YouTube

Yuval Noah Harari AUTHOR

netrajigneshpatel@gmail.com

Edit Profile | Logout

TOTAL BOOKS: 3 | AVERAGE RATING: 4.0 | TOTAL REVIEWS: 1 | TOTAL READERS: 1

Your Books

Recent Activity

ChauhanGautam04 reviewed "Sapiens: A Brief History of Humankind" Nov 25, 2025

A reader added "Sapiens: A Brief History of Humankind" to their shelf Nov 25, 2025

26°C Sunny | 1:59 PM | 12/25/2025

Final-MSC CS Sem 4 to 10.pdf | Twisted Lies - ReadNext | Author Dashboard - Yuval Noah | New tab

127.0.0.1:5000/author_dashboard

Import favorites | YouTube

Yuval Noah Harari AUTHOR

netrajigneshpatel@gmail.com

Edit Profile | Logout

TOTAL BOOKS: 3 | AVERAGE RATING: 4.0 | TOTAL REVIEWS: 1 | TOTAL READERS: 1

Your Books

Recent Activity

ChauhanGautam04 reviewed "Sapiens: A Brief History of Humankind" Nov 25, 2025

A reader added "Sapiens: A Brief History of Humankind" to their shelf Nov 25, 2025

About You

Israeli historian and author of Sapiens and Homo Deus.

Recent Reviews

ChauhanGautam04 reviewed **Sapiens: A Brief History of Humankind** ★★★★☆

Currently reading Sapiens by Yuval Noah Harari, and wow, it's already blowing my mind. Harari's

27°C Clear | 10:20 PM | 12/25/2025

Top Rated Books

#	Book Title	Author	Rating	Reviews	Language
1	It	Stephen King	5.0 ★	1 reviews	English
2	Twisted Love	Ana Huang	5.0 ★	1 reviews	English
3	A Court of Thorns and Roses	Sarah J. Maas	5.0 ★	1 reviews	English
4	Ugly Love	Colleen Hoover	5.0 ★	1 reviews	English
5	Twisted Hate	Ana Huang	5.0 ★	1 reviews	English
6	Twisted Lies	Ana Huang	4.5 ★	2 reviews	English
7	2 States	Chetan Bhagat	4.2 ★	5 reviews	English
8	Sapiens: A Brief History of Humankind	Yuval Noah Harari	4.0 ★	1 reviews	English
9	India After Gandhi	Ramachandra Guha	4.0 ★	1 reviews	English
10	The Da Vinci Code	Dan Brown	4.0 ★	1 reviews	English

Most Active Users

#	Username	Reviews Written	Books in Shelves	Join Date
1	ChauhanGautam04	5	5	Nov 24, 2025
2	ruchita73	2	4	Nov 24, 2025
3	maitri63	2	4	Nov 24, 2025
4	Jules@123	2	3	Dec 25, 2025
5	aman59	2	1	Nov 24, 2025
6	netra89	1	1	Nov 24, 2025
7	keyuri75	1	1	Nov 24, 2025
8	RhythmMahale	1	1	Nov 24, 2025
9	JayP	1	0	Nov 24, 2025
10	rushang1999	1	0	Nov 24, 2025

+

System Testing

Test Case	Description	Expected Result	Status
1	User Registration	New users (Reader/Author) should be able to register with valid details	Pass
2	User Login	Registered users can log in using valid credentials	Pass
3	Role-Based Access	Users can access features according to their roles (Admin, Author, Reader)	Pass
4	Author Registration Approval	Admin can approve or reject author registration requests	Pass
5	Add Book Details	Approved authors can add new book information	Pass
6	Update Book Details	Authors can update or delete their book details	Pass
7	Browse and Search Books	Readers can browse and search books by genre, author, and keywords	Pass
8	Book Recommendation	Readers receive personalized recommendations based on preferences	Pass
9	Rate and Review Books	Readers can rate and review selected books	Pass
10	Bookshelf Management	Readers can add, update, and remove books from their bookshelf	Pass
11	View Analytics	Admin can view user activity and popular book statistics	Pass
12	User Profile Update	Users can update their profile details	Pass

Sample Code

Recommendation logic :

```
"""
@app.route("/recommendations")
def recommendations():
    if "user_id" not in session:
        flash("Please log in first.")
        return redirect(url_for("login"))

    conn = get_db_connection()
    cursor = conn.cursor(dictionary=True)

    # --- Last viewed book (Continue Browsing) ---

    continue_books = []

    cursor.execute("""
SELECT
    b.book_id,
    b.title,
    a.name AS author,
    b.cover_image_url,
    MAX(ubv.view_date) AS last_viewed
FROM user_book_views ubv
JOIN books b ON ubv.book_id = b.book_id
LEFT JOIN authors a ON b.author_id = a.author_id
WHERE ubv.user_id = %s
GROUP BY b.book_id, b.title, a.name, b.cover_image_url
ORDER BY last_viewed DESC
LIMIT 5
    """, (session["user_id"],))
```

```
    @app.route("/recommendations")
def recommendations():
    if "user_id" not in session:
        flash("Please log in first.")
        return redirect(url_for("login"))

    conn = get_db_connection()
    cursor = conn.cursor(dictionary=True)

    # --- Last viewed book (Continue Browsing) ---

    continue_books = []

    cursor.execute("""
SELECT
    b.book_id,
    b.title,
    a.name AS author,
    b.cover_image_url,
    MAX(ubv.view_date) AS last_viewed
FROM user_book_views ubv
JOIN books b ON ubv.book_id = b.book_id
LEFT JOIN authors a ON b.author_id = a.author_id
WHERE ubv.user_id = %s
GROUP BY b.book_id, b.title, a.name, b.cover_image_url
ORDER BY last_viewed DESC
LIMIT 5
    """, (session["user_id"],))
```

```
JOIN book_genres bg ON b.book_id = bg.book_id
JOIN genres g ON bg.genre_id = g.genre_id
LEFT JOIN authors a ON b.author_id = a.author_id
WHERE g.genre_name IN ({placeholders})
LIMIT 10
"", tuple(user_genres))
genre_books = cursor.fetchall()

# --- 4 Recommend based on recent searches ---
search_books = []
if searches:
    query_conditions = " OR ".join(["b.title LIKE %s OR g.genre_name LIKE %s"] * len(searches))
    params = []
    for s in searches:
        like_s = f"%{s}%""
        params.extend([like_s, like_s])
    cursor.execute(f"""
        SELECT DISTINCT b.book_id, b.title, a.name AS author, b.cover_image_url
        FROM books b
        LEFT JOIN authors a ON b.author_id = a.author_id
        LEFT JOIN book_genres bg ON b.book_id = bg.book_id
        LEFT JOIN genres g ON bg.genre_id = g.genre_id
        WHERE {query_conditions}
        LIMIT 10
    """, params)
    search_books = cursor.fetchall()

cursor.close()
conn.close()
```

```
params = []
for s in searches:
    like_s = f"%{s}%""
    params.extend([like_s, like_s])
cursor.execute(f"""
    SELECT DISTINCT b.book_id, b.title, a.name AS author, b.cover_image_url
    FROM books b
    LEFT JOIN authors a ON b.author_id = a.author_id
    LEFT JOIN book_genres bg ON b.book_id = bg.book_id
    LEFT JOIN genres g ON bg.genre_id = g.genre_id
    WHERE {query_conditions}
    LIMIT 10
""", params)
search_books = cursor.fetchall()

cursor.close()
conn.close()

return render_template(
    "recommendations.html",
    search_books=search_books,
    genre_books=genre_books,
    continue_books=continue_books,
    active_page="recommendations"
)
```

Future Enhancements

1. Advanced Recommendation Engine

- a. Hybrid Recommendation System
 - Mix content-based, collaborative, and friend-based suggestions
 - Weighted scoring enhances recommendation accuracy
- b. Deep Learning Models
 - Use NCF/BERT for better user-book similarity
 - Embeddings help understand book meaning and user patterns

2. Enhanced User Interaction

- a. Personalized Dashboards
 - Show favourite genres, reading stats, and patterns
 - Provide real-time updates like recently viewed/suggested books
- b. Smart Search
 - Offer auto-suggest, spell correction, and advanced filters
 - Add voice search for quicker discovery

3. Book Shelf & Library Enhancements

- a. Smart Book Shelves
 - Auto-organize shelves based on habits and interests
 - Support custom shelf creation and management
- b. Reading Progress Tracker
 - Track reading percentage or page progress
 - Display reading history through simple charts/timeline

Bibliography

Flask Documentation

- Guidance and references from Flask's official documentation were used for developing the backend of the Book Recommendation System, including routing, authentication, and server-side logic.

MySQL Database Documentation

- References from MySQL's official documentation were used for designing, creating, and managing relational databases to store users, books, ratings, reviews, and bookshelf data.

Goodreads – Book Recommendation Platform

- Goodreads was studied as a real-world reference system during the survey phase to understand user ratings, reviews, personalized recommendations, and book discovery workflows.

Python Documentation

- Python's official documentation was used to understand programming concepts, libraries, and implementation techniques required for recommendation logic and data processing.

Stack Overflow

- Stack Overflow developer community was used for troubleshooting errors, understanding best practices, and resolving issues related to Python, Flask, database integration, and frontend development.

Conclusion

The Book Recommendation System successfully fulfills its objective of providing an interactive platform for Authors, Readers, and Administrators. The system enables authors to efficiently manage book information, allows readers to discover books through personalized recommendations with rating and review features, and gives administrators full control over platform activities. By analyzing user behavior and preferences, the system enhances book discovery and improves recommendation accuracy. Overall, the project demonstrates an effective, scalable, and user-friendly solution for modern digital book management and recommendation needs.