Project Report
For

Online E-book Management System

BRAINWARE UNIVERSITY

Department of Computer Science and Engineering(Artificial Intelligence and Machine Learning)

Barasat, West Bengal

Submitted as part of the Course requirement for Software Engineering Lab, 7th Semester.

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DECLARATION

I hereby declare that this project titled “Online E-book Management System” is my original work completed under the guidance of Mr. Rudranath Mitra. This work has been completed as a part of the coursework for Software Engineering Lab.

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Arun Maity

Date : 25/11/2025

ACKNOWLEDGEMENT

I would like to express my sincere gratitude to Mr. Rudranath Mitra, my project guide, for his continuous guidance, encouragement, and valuable insights throughout the development of this course project. His clear feedback and supportive mentorship greatly enhanced my understanding of the concepts involved in building the Online E-book Management System. I would also like to extend my thanks to Dr. Shivnath Ghosh, the Head of the Department of Computer Science and Engineering for fostering an academic environment that encourages practical, project-based, hands-on learning. His support and leadership have always motivated us to approach technical and analytical problem-solving with confidence.

I am also grateful to the course instructor for assigning this project, as it offered an opportunity to apply the learning from classroom to a real-world project.

ABSTRACT

The rapid digitization of educational resources and the increasing demand for easy access to academic material have created a strong demand for online e-book repositories.

Online E-Book Management System is a web-based platform designed to store, organize, manage, upload and retrieve e-book resources efficiently.

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INTRODUCTION

The rise of digital technology has significantly changed how educational content is stored, accessed, and managed. With institutions increasingly adopting online learning, the need for easily accessible digital resources has grown. Traditional library systems often fall short due to limited physical access, time-consuming manual searches, and challenges in organizing large volumes of books.

To address these limitations, an online E-Book Management System serves as a centralized digital repository where users can securely log in, browse categories, search for academic materials, view book details, and download e-resources from any device. Administrators can efficiently upload new e-books, manage categories, and maintain updated records, ensuring smooth organization of the library's digital collection.

This project integrates essential principles of web development, database design, and user interface engineering to create a practical platform that enhances how students and faculty interact with academic content.

PROBLEM DEFINITION

Traditional library systems depend on physical books and manual record-keeping, which creates several limitations. Access to resources is restricted by location and timing, making it difficult for students who need materials anytime. Manual searches are slow and become inefficient as the collection grows. Physical books require storage space, constant upkeep, and naturally degrade with frequent use.

Additionally, managing user records, tracking issued books, and updating collections manually is time-consuming and prone to errors. As digital learning becomes more common, these issues create significant barriers to quick and reliable access to academic resources.

The main problem is the absence of a centralized and easily accessible digital system that allows users to access e-books efficiently while simplifying management tasks for administrators.

OBJECTIVES

The Online E-Book Management System aims to fulfil the following objectives:

- **Develop a centralized digital platform** that allows users to access, store, upload and manage e-books easily and efficiently.
- **Provide secure authentication and role-based access**, ensuring students, faculty, and administrators interact with the system appropriately.
- **Enable fast and effective search capabilities** so users can quickly find e-books by title, author, category, or keywords.
- **Simplify administrative tasks** by offering easy-to-user tools for uploading books, managing categories, and maintaining digital records.
- **Improve accessibility** by allowing users to view or download books anytime, removing the limitations of physical libraries.
- **Reduce manual workload and errors** commonly associated with traditional book management and record-keeping.
- **Ensure organized storage and smooth retrieval**, supporting a structured and user-friendly digital repository.
- **Create a functional and scalable system** that demonstrates practical application of web development and database design concepts.

SCOPE OF THE PROJECT

The Online E-book Management System aims to provide an accessible and organized platform for managing digital learning resources within academic institutions. It is suitable for use in schools, colleges, universities, and training centres, where digital materials are increasingly preferred over physical books.

The system enables users to **search, view, and download e-books** through any standard web browser, ensuring easy access across devices and locations. Administrators can **upload books, manage categories, handle user accounts, and maintain records**, reducing the manual effort of traditional library management.

Its scope includes support for **multiple book categories**, scalable storage, and continuous access without time or location limits. Although the project focuses on core features, it also provides a foundation for future additions such as better search filters, recommendation options, mobile integration, and multimedia support.

Overall, the system offers a functional, user-friendly, and scalable digital library meeting academic needs.

SYSTEM REQUIREMENTS

Hardware Requirements

- Processor: Intel i3 or above
- RAM: Minimum 4 GB
- Storage: At least 20 GB free space

Software Requirements

- Operating System: Windows/Linux
- Front-end: HTML, CSS, JavaScript
- Back-end: Node.js
- Database: MongoDB
- Tools: VS Code, Web Browser

MODULE DESCRIPTION

The **Online E-Book Management System** is divided into several modules, each handling a specific set of functions to ensure smooth operation and ease of use.

1. User Authentication Module
This module manages user login and registration. It verifies credentials, maintains secure sessions, and ensures that only authorized users can access the system. It supports both student and admin roles with appropriate permissions.

2. . User Module
The user module allows students and faculty to browse categories, search for e-books, view book details, and download available files. It is designed to be simple and user-friendly, ensuring quick access to required materials.

3. Admin Module
The admin module provides administrators with tools to manage the system. It includes options to upload new e-books, edit or delete existing entries, create categories, and manage user accounts. This module ensures the digital library remains organized and up to date.

4. Management Module
This module handles all operations related to e-books, including uploading files, entering metadata (title, author, category, description),updating book information, and organizing books into categories. It ensures efficient storage and retrieval.

5. earch and Retrieval Module

The search module enables users to quickly locate e-books using keywords, titles, authors, or categories. It ensures relevant results are displayed efficiently, improving the overall accessibility of the digital library.

6. atabase Management Module

This module handles the backend database operations, including storing user information, book details, categories, and download records. It ensures data consistency, integrity, and organized storage.

DATABASE DESIGN

The Online E-Book Management System uses **MongoDB**, a flexible NoSQL database that stores data in JSON-like documents, making it ideal for handling diverse e-book information and future scalability. The system is organized into multiple collections: **Users** (login details and roles), **Books** (titles, authors, categories, descriptions, tags, and file paths), **Categories** (subject-based grouping), and **Download Logs** (tracking user activity).

MongoDB's flexible structure supports embedded fields like tags or authors and allows references between books, categories, and user interactions. This design ensures quick data retrieval, efficient organization, and easy expansion. Overall, MongoDB provides a simple, scalable, and well-structured database solution for the E-Book Management System.

IMPLEMENTATION

The Online E-Book Management System is developed using a modern JavaScript-based MERN stack. The front end is built with React, using reusable components for pages like login, book listings, search, and downloads. Tailwind CSS ensures a clean, responsive UI with minimal custom styling.

The back end uses Node.js and Express, handling authentication, book and category management, and all server-side logic through RESTful APIs. Security measures such as encrypted passwords and JWT-based authentication can be integrated for safe access. MongoDB stores book metadata, user details, categories, and download logs. File paths for uploaded e-books are saved in the database, while the actual files remain on the server or cloud storage. Mongoose simplifies schema creation and database operations.

TESTING

Testing ensures that the system operates correctly and meets its intended requirements. The project uses several testing approaches:

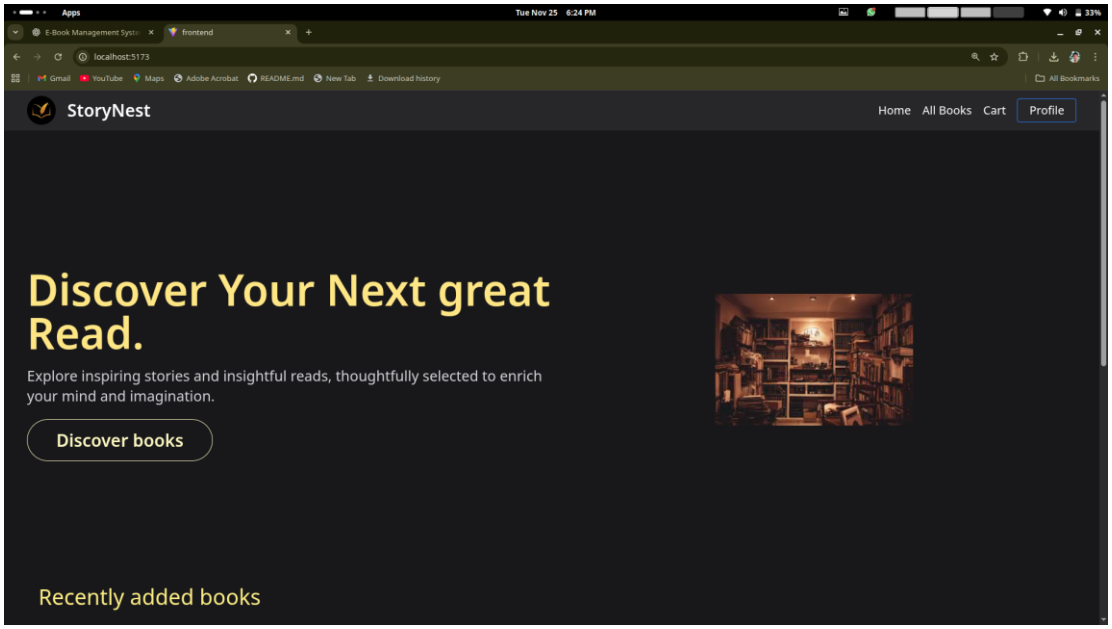
- **Unit Testing:** Individual functions such as login, book upload, and search are tested to ensure they produce the expected output.

- **Integration Testing:** Modules like authentication, book management, and search are tested together to verify smooth interaction.
- **Functional Testing:** User tasks, such as downloading a book or browsing categories, are checked against the system's specifications.
- **User Acceptance Testing:** The system is tested from the perspective of a typical user to ensure ease of use and correct behaviour.

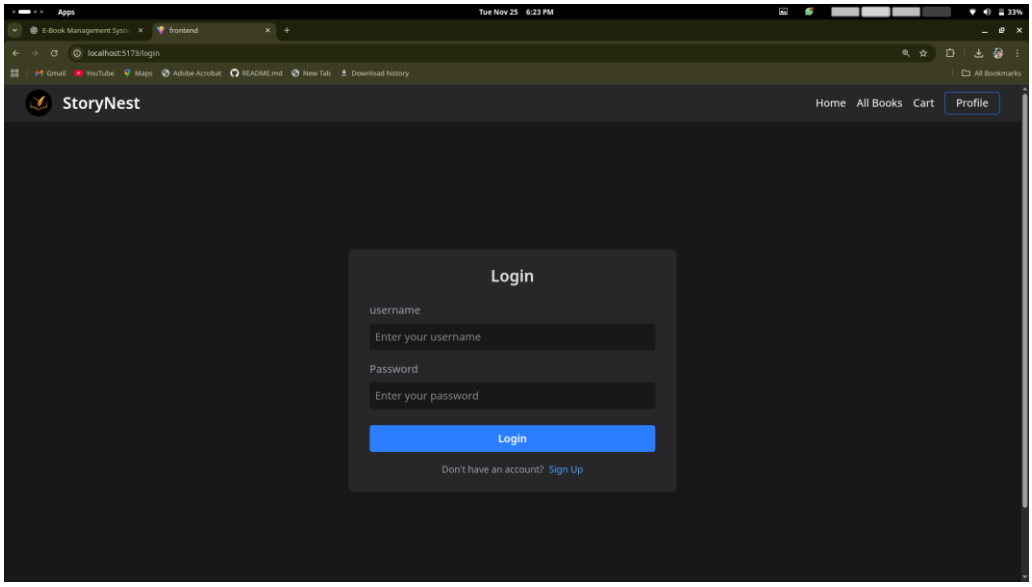
Sample tests include verifying valid and invalid login attempts, checking whether uploaded books appear correctly in listings, and ensuring search results match user queries. All key functionalities were tested and found to be working as intended.

SCREENSHOTS

1.Home page



2.Login



RESULTS

The results showed that all major functionalities worked as expected. User authentication validated inputs correctly, uploaded books appeared immediately in listings, and search results were accurate. Book downloads were smooth, and the system responded quickly across all operations. Overall, testing confirmed that the system is stable, efficient, and suitable for use as a digital library platform.

CONCLUSION

The **Online E-Book Management System** provides an efficient and user-friendly platform for accessing and managing digital learning resources. By integrating React, Node.js, MongoDB, and Tailwind CSS, the system offers smooth navigation, secure access, and organized book management for both users and administrators. It successfully addresses the limitations of traditional libraries by improving accessibility, reducing manual tasks, and providing a scalable foundation for future enhancements. Overall, the project demonstrates practical application of modern web technologies in building a functional academic tool.

REFERENCES

- MongoDB Documentation – https://www.mongodb.com/docs/
- React Official Documentation – https://react.dev/
- Node.js & Express Documentation – https://nodejs.org/
- Tailwind CSS Documentation – https://tailwindcss.com/docs
- MDN Web Docs – HTML, CSS, JavaScript Reference
- GeeksforGeeks & TutorialsPoint – Web Development Articles