

A

PROJECT REPORT

ON

PENTOPUBLIC

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Authorized Training Centre



Under the Guidance of

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CERTIFICATE

This is to certify that the project report entitled **PenToPublic** is a bonfire work carried out by **Dantal Dinesh, Kulkarni Supriya, Nichale Amruta** and submitted in partial fulfilment of the requirement for the C-DAC ACTS, DAC course in Institute of Emerging Technology in the batch of Feb 2025.

Course Coordinator

External Examiner

ACKNOWLEDGEMENT

This project **PenToPublic** was a great learning experience for us and we are submitting this work to Advanced Computing Training School (CDAC).

We are very glad to mention the **Mr. Manoj Deshmukh** for her valuable guidance to work on this project. Her guidance and support helped us to overcome various obstacles and intricacies during the course of project work.

Our most heart full thanks goes to **Mr. Sangram Patil (Director ,IET)** who gave all the required support and kind coordination to provide all the necessities like required hardware , internet facility and extra lab hours to complete the project and throughout the course up to the last day here in C-DAC ACTS, Pune.

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Abstract

This project presents a comprehensive digital platform for publishing and consuming eBooks and audiobooks, developed using ASP.NET Core for the backend and React.js for the frontend. The system is designed to cater to three major user roles — Authors, Readers, and Admins — each with dedicated access and features.

Authors can publish content via a user-friendly dashboard, including both free and premium books. Readers can browse and access content based on their subscription status, with support for both one-time purchases and recurring subscriptions. Payments are securely handled using integration. Admins have access to a control panel where they can approve books, manage users, and oversee platform activity.

The platform employs JWT-based user authentication and authorization, ensuring secure access and role-based functionality. It includes interactive features such as reading progress tracking, bookmarking, and a 5-star review and rating system to enhance user engagement.

All data is persistently stored using SQL Server, and managed through Entity Framework Core, ensuring efficient handling of complex relationships like book-category mapping, reading progress, payments, and user roles. The application is hosted on Azure , offering a scalable and highly available cloud infrastructure.

This project demonstrates key principles of full-stack development, modern UI/UX, secure payment integration, cloud deployment, and database-driven design, making it a robust, real-world solution for digital content distribution and subscription-based services.

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1. INTRODUCTION

This project is a full-stack web application designed to serve as a comprehensive digital publishing and reading platform. It enables authors to create and publish eBooks and optional audiobooks through an intuitive dashboard, while providing readers with an engaging interface to browse, purchase, and access both free and premium content via a subscription-based model.

The application is built using ASP.NET Core for the backend and React.js for the frontend, ensuring a fast, responsive, and scalable user experience. SQL Server with Entity Framework Core is used to manage relational data, supporting complex associations between users, content, and subscriptions.

Key features include secure user authentication and authorization using JWT tokens, integration with Razorpay Demo for payment processing and recurring subscriptions, and an admin panel for managing users, approving books, and monitoring platform activity.

To enhance the reading experience, features like reading progress tracking, last-page bookmarking, and a 5-star rating and review system are implemented. The platform is deployed on Azure, ensuring high availability, scalability, and reliability.

This project demonstrates expertise in full-stack development, cloud deployment, payment gateway integration, and modern web technologies, making it a robust solution for digital content distribution and subscription-based platforms.

2. PROBLEM DEFINITION AND SCOPE

2.1 PROBLEM DEFINITION

In the digital era, authors face challenges in publishing and monetizing their content, while readers often struggle to find an engaging and centralized platform for accessing quality eBooks and audiobooks. Existing platforms may lack features such as flexible publishing tools for authors, subscription-based models for readers, or interactive functionalities like reading progress tracking and reviews.

There is a need for a **scalable, user-friendly, and secure web application** that enables authors to publish and manage their content while providing readers with a seamless experience to browse, purchase, and access both free and premium content. Additionally, the platform should include administrative functionalities for managing users, content approval, and payment processing.

2.2 SCOPE OF THE PROJECT

The scope of this project includes:

Author Dashboard:

- Allow authors to publish eBooks and audiobooks.
- Manage uploaded content and track performance.

Reader Portal:

- Browse free and premium books.
- Purchase books or subscribe to access premium content.
- Track reading progress, bookmark last read page, and leave ratings/reviews.

Admin Panel:

- Manage users and subscriptions.
- Approve or reject published books.
- Monitor platform activity and handle reports/issues.

Payment & Subscription System:

- Integration with Razorpay Demo for secure payments and recurring subscriptions.

User Authentication & Security:

- JWT-based authentication and role-based authorization.

Technology Stack:

- **Backend:** ASP.NET Core (REST APIs)
- **Frontend:** React.js
- **Database:** SQL Server with Entity Framework Core
- **Hosting:** Azure for scalable and reliable deployment

The platform will serve as a **complete digital publishing and subscription-based reading solution**, bridging the gap between authors and readers with a secure and interactive experience.

3.SOFTWARE REQUIREMENT SPECIFICATION (SRS)

3.1 Purposed System

The purpose of this project is to develop a **full-stack web application** that enables authors to publish eBooks and audiobooks while providing readers with a subscription-based platform to browse, purchase, and read premium or free content. The platform includes secure payment processing, user authentication, and an admin panel for content and user management.

3.2 Scope

The application will provide:

- An **Author Dashboard** for uploading and managing content.
- A **Reader Portal** for browsing, purchasing, and reading eBooks.
- **Subscription Management** with recurring payments via Razorpay Demo.
- **Admin Panel** for managing users, approving content, and monitoring platform activity.
- Features such as **reading progress tracking, bookmarking, and reviews**.

The project will be built using **ASP.NET Core (backend)**, **React.js (frontend)**, **SQL Server with Entity Framework Core (database)**, and **Azure (deployment)**.

Definitions, Acronyms, and Abbreviations

- **JWT**: JSON Web Token, used for authentication.
 - **EF Core**: Entity Framework Core, ORM for database operations.
 - **SaaS**: Software as a Service.
-

4. System Modules :

Overall Description

Product Perspective

The system is a standalone full-stack web application accessible via browsers. It interacts with the database for storing user, content, and subscription data and integrates with Razorpay Demo for payment processing.

User Classes and Characteristics

- **Authors** – Upload and manage eBooks/audiobooks.
- **Readers** – Browse, purchase, and read books.
- **Admin** – Manage users, approve books, and monitor platform activities.

Operating Environment

- **Frontend:** React.js, HTML5, CSS3, JavaScript.
- **Backend:** ASP.NET Core Web API.
- **Database:** SQL Server.
- **Hosting:** Azure.

Constraints

- Must support multiple roles with different access levels.
- Payment processing must comply with Razorpay's Demo security guidelines.
- Scalable deployment on Azure.

Assumptions and Dependencies

- Users have stable internet access.
- Razorpay Demo payment gateway is available in the deployment region.

5.Functional Requirements :

Authentication & Authorization

- The system must allow **user registration/login** with JWT-based authentication.
- Roles: **Reader, Author, Admin.**

Author Features

- Upload and manage eBooks and audiobooks.
- Track book performance and earnings.

Reader Features

- Browse and search books.
- Purchase books or subscribe to premium content.
- Track reading progress and bookmark last page.
- Leave ratings and reviews.

Admin Features

- Approve/reject books before publishing.
- Manage users and subscriptions.
- Monitor platform statistics.

Payment & Subscription

- Integrate **Razorpay** Demo for one-time payments and recurring subscriptions.
- Provide transaction history for users.

Non-Functional Requirements

- **Security:** JWT authentication, encrypted passwords, secure payments.
- **Performance:** The application must load pages within 3 seconds for normal network conditions.
- **Scalability:** Must handle at least 10,000 concurrent users.
- **Usability:** Responsive UI for mobile and desktop users.

5.1Hardware and Software Requirements :

Hardware Requirements

Component Recommended Requirement

Processor Intel i5 / Ryzen 5

RAM 8 GB or higher

Storage 50 GB or higher

Software Requirements

- **Backend:** ASP.NET Core 7.0+
- **Frontend:** React.js 18+
- **Database:** SQL Server 2019+

- **Cloud Hosting:** Azure
 - **Payment Gateway:** Razorpay Demo API
 - **IDE:** Visual Studio / VS Code
-

Database Requirements

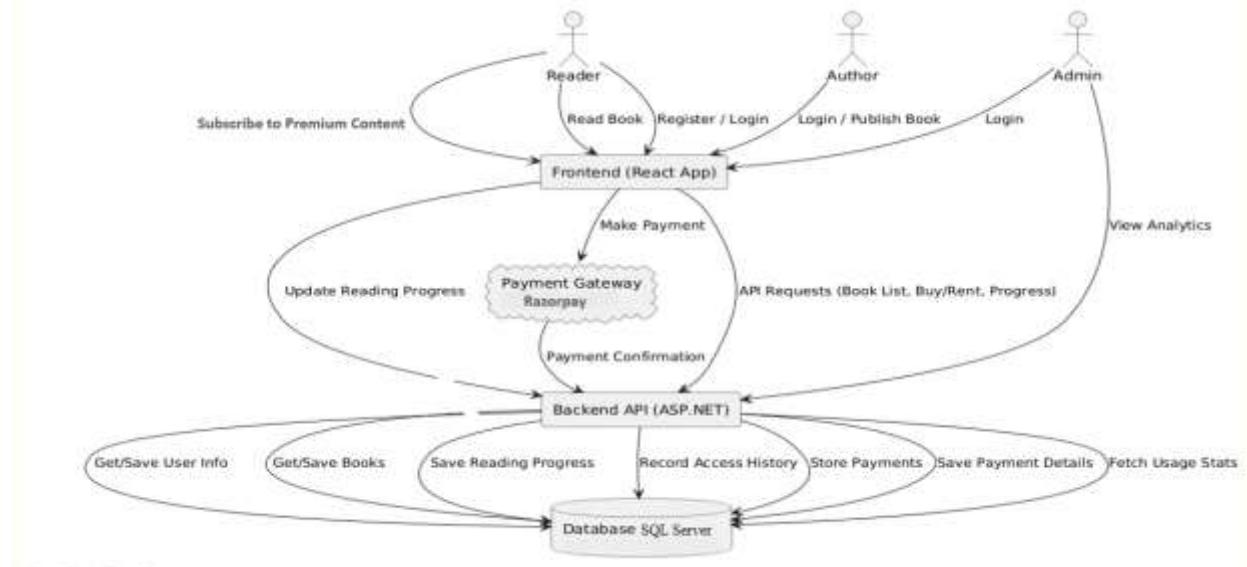
- Users Table (UserId, Name, Email, Role, PasswordHash, etc.)
 - Books Table (BookId, Title, AuthorId, Price, Status, etc.)
 - Subscriptions Table (SubscriptionId, UserId, Plan, ExpiryDate, etc.)
 - Payments Table (PaymentId, UserId, Amount, TransactionId, etc.)
 - Reviews Table (ReviewId, UserId, BookId, Rating, Comment, Date)
-

Future Enhancements

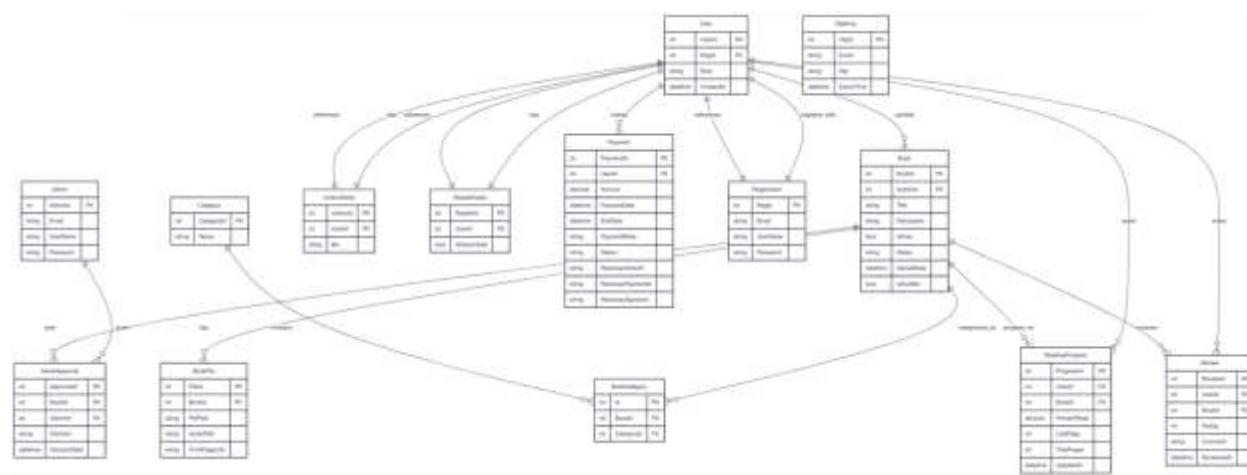
- Mobile application for iOS and Android.
- AI-powered book recommendations.
- Multi-language support for books and audiobooks.

6.UML Diagram

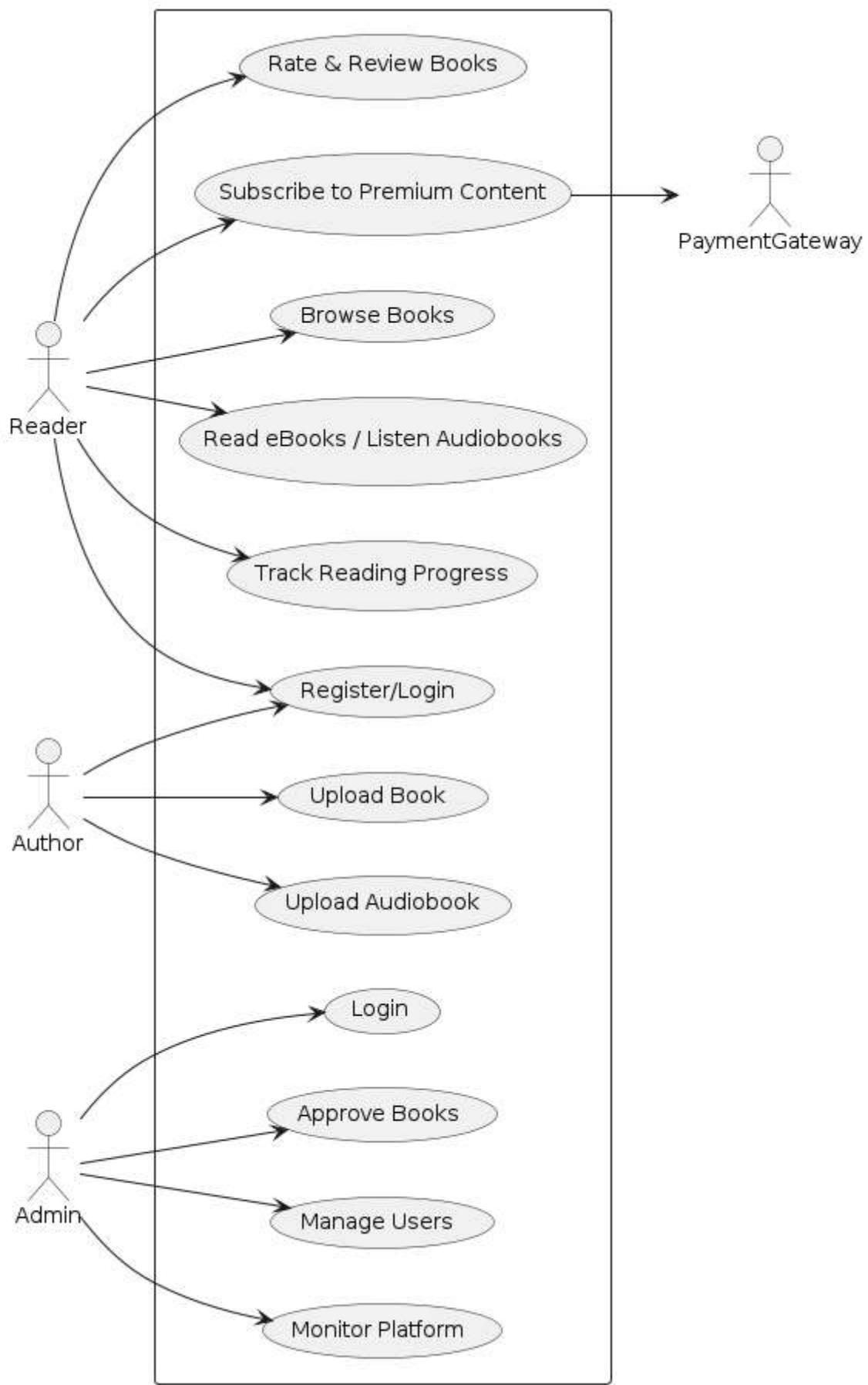
6.1 DFD:



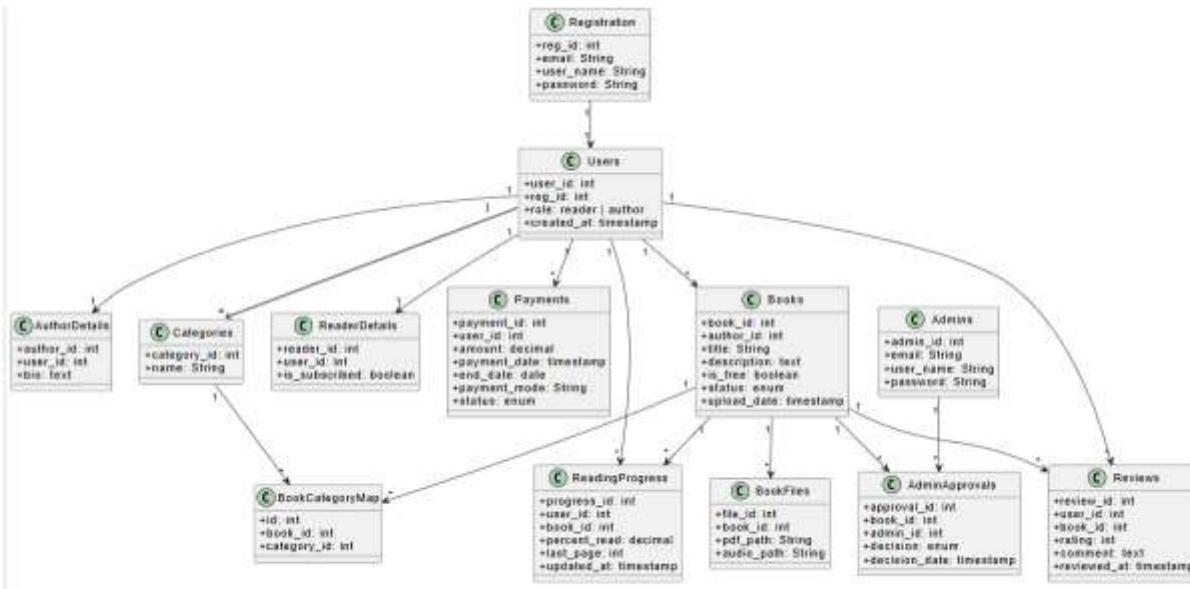
6.2ERD :



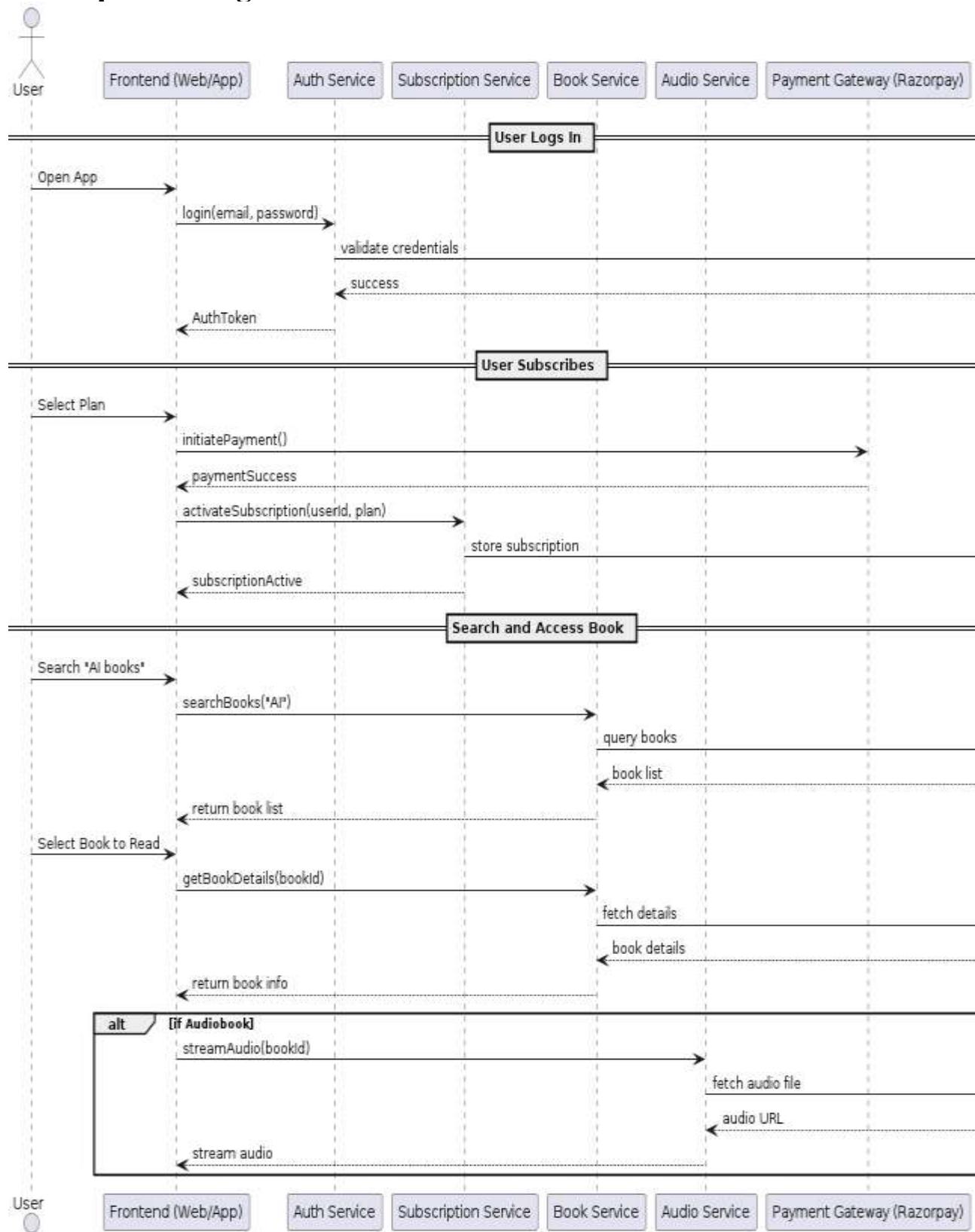
6.3 Use case diagram :



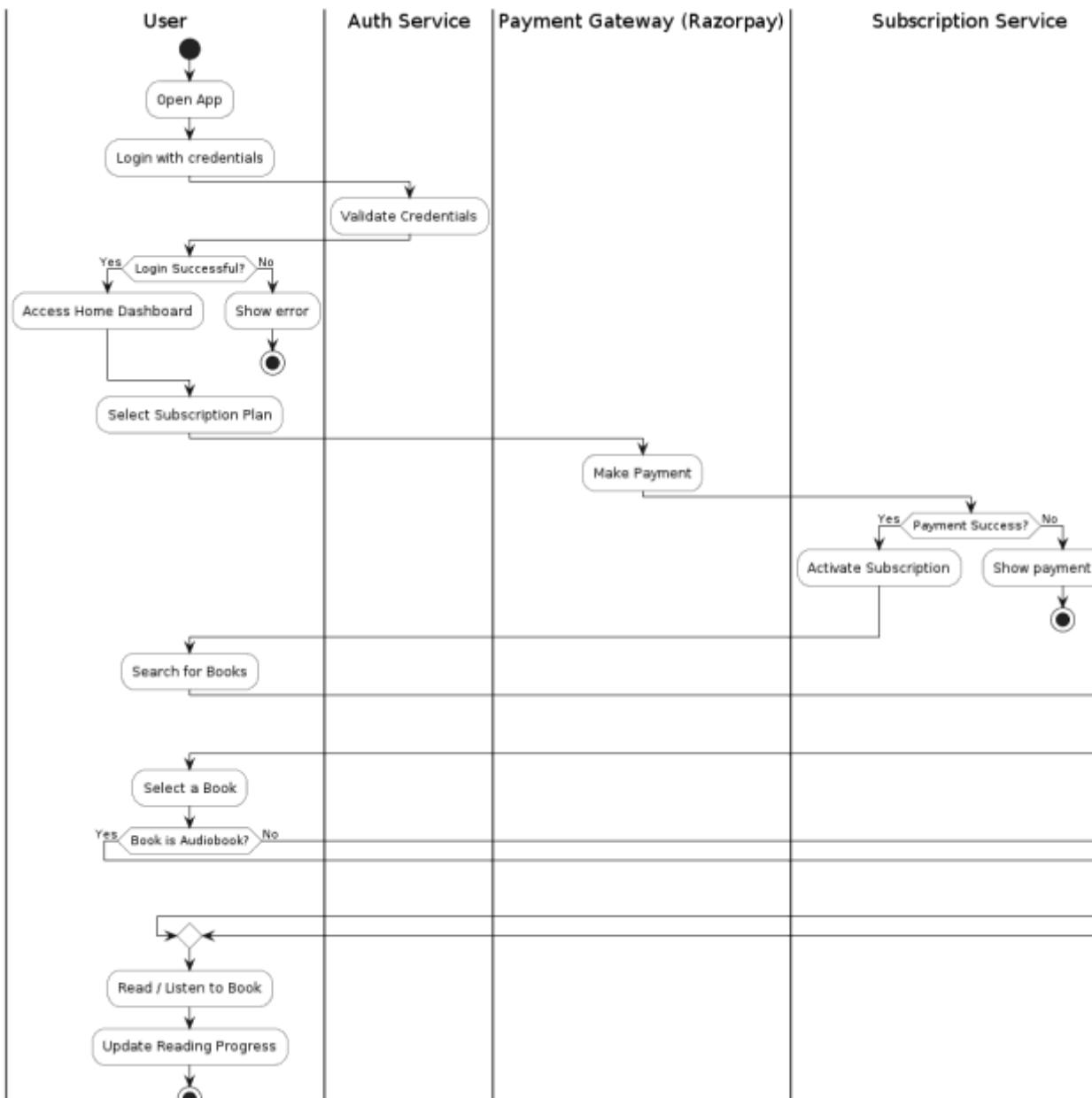
6.4 Class Diagram :



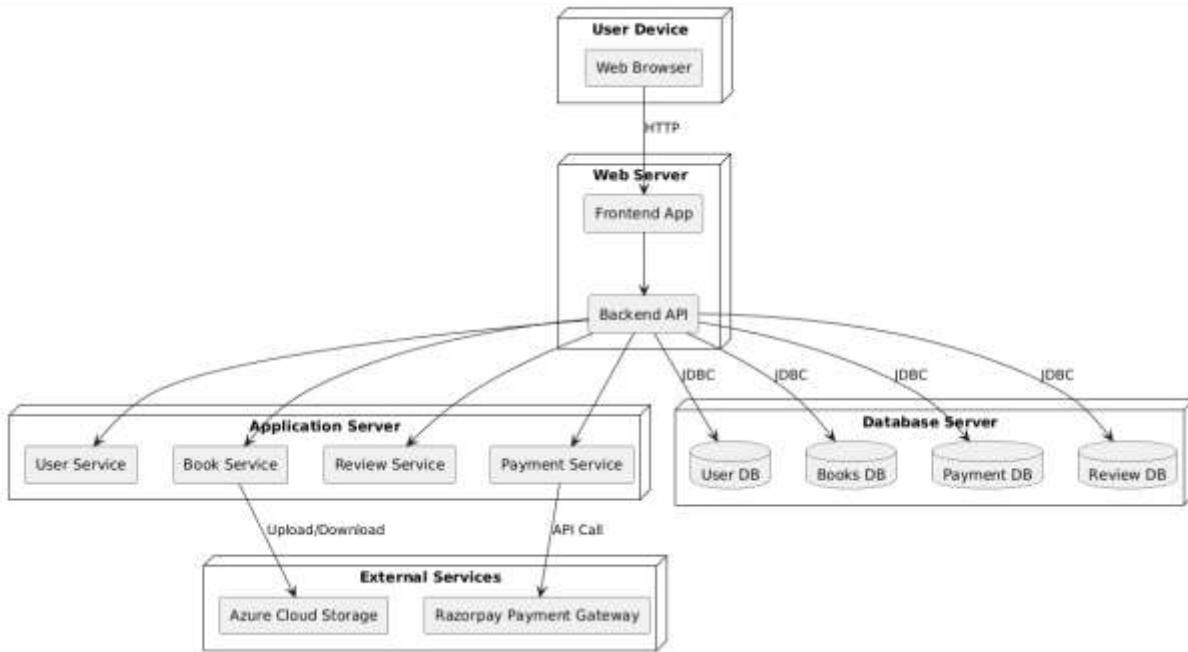
6.5 Sequence diagram :



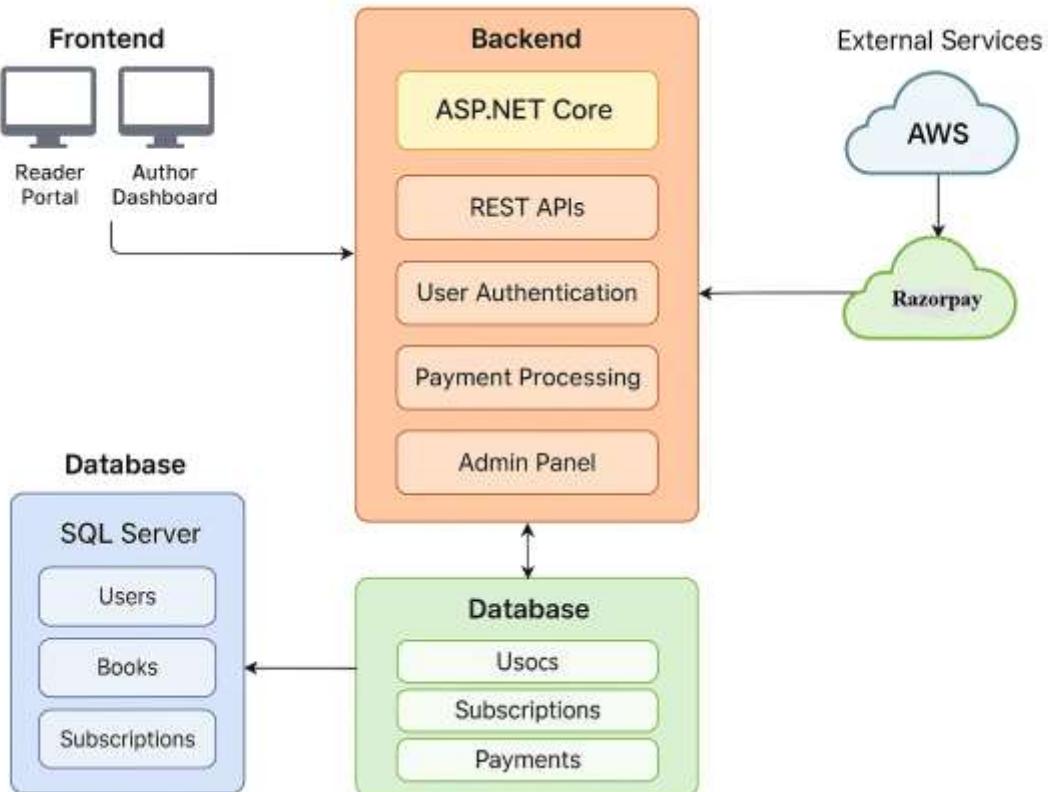
6.6Activity Diagram :



6.7 Deployment diagram :



6.8 System Architecture :



7.Test Cases :

Test Case ID	Test Category	Test Scenario	Test Steps	Expected Result	Status
TC001	Authentication	Valid login for all roles	Enter valid credentials → Submit login	User is redirected to their role-based dashboard (admin, author, reader)	Pass
TC002	Authentication	Invalid login	Enter incorrect password/email → Submit login	System displays 'Invalid credentials' message	Pass
TC003	Authentication	Role-based redirect for reader	Login as reader	If subscribed → reader dashboard, else → prompt subscription	Pass
TC004	Registration	Reader registration	Fill reader details → Submit	Records created in registration, users, and reader details	Pass
TC005	Registration	Author registration	Fill author details including bio → Submit	Records created in registration, users, and author details	Pass
TC006	Reader	Free book access	Click on free book	Book opens without payment prompt	Pass
TC007	Reader	Subscription-only access	Click on premium book (without subscription)	Subscription popup appears	Pass
TC008	Author	Upload new book	Fill details → Select category → Upload files → Submit	Book stored with pending status	Pass
TC009	Admin	Admin login	Enter admin credentials → Login	Admin dashboard loads	Pass
TC010	Security	SQL Injection prevention	Try ' OR 1=1-- in login fields	Login fails with safe error message	Pass

TC011	Authentication	Valid login for all roles	Enter valid credentials → Submit login	User is redirected to their role-based dashboard (admin, author, reader)	Pass
TC012	Authentication	Invalid login	Enter incorrect password/email → Submit login	System displays 'Invalid credentials' message	Pass
TC013	Authentication	Role-based redirect for reader	Login as reader	If subscribed → reader dashboard, else → prompt subscription	Pass
TC014	Registration	Reader registration	Fill reader details → Submit	Records created in registration, users, and reader details	Pass
TC015	Registration	Author registration	Fill author details including bio → Submit	Records created in registration, users, and author details	Pass
TC016	Reader	Free book access	Click on free book	Book opens without payment prompt	Pass
TC017	Reader	Subscription-only access	Click on premium book (without subscription)	Subscription popup appears	Pass
TC018	Author	Upload new book	Fill details → Select category → Upload files → Submit	Book stored with pending status	Pass

TC019	Admin	Admin login	Enter admin credentials → Login	Admin dashboard loads	Pass
TC020	Security	SQL Injection prevention	Try ' OR 1=1-- in login fields	Login fails with safe error message	Pass
TC021	Backend	JWT token generation on login	Login with valid credentials	Valid JWT token is issued and returned in response	Pass
TC022	Backend	Token validation on protected route	Access protected API with invalid/expired token	Access denied with 401 Unauthorized	Pass
TC023	Backend	Role-based access control	Try accessing author route as reader	403 Forbidden or proper error message	Pass
TC024	Backend	Book upload endpoint validation	Submit book upload with missing fields	API returns 400 Bad Request	Pass
TC025	Backend	Handle SQL constraint violations	Try to insert duplicate email/username	Backend throws integrity constraint error	Pass
TC026	Backend	Razorpay Demo payment integration	Initiate payment from backend with valid keys	Razorpay Demo returns success with transaction ID	Pass
TC027	Backend	Subscription expiry check	Access content with expired subscription	Access denied and prompt to renew	Pass
TC028	Backend	Reading progress save API	Send POST request with book ID, page no	Progress saved in DB correctly	Pass
TC029	Backend	Book review POST endpoint	Submit a review (rating + comment)	Review is inserted and linked to user/book	Pass
TC030	Backend	Category mapping logic	Map book to multiple categories	Entries inserted into mapping table successfully	Pass

8.Screenshots :

Home :



The homepage features a dark header with the PenToPublic logo and navigation links for Home, About, Contact, and a search icon. Below the header is a section titled "What Our Community Says" containing three testimonial cards. Each card includes a five-star rating icon, a quote, the author's name, and their title.

Author	Title	Testimonial
Sarah Johnson	Published Author	"PenToPublic gave me the platform to reach thousands of readers. It's been an incredible journey!"
Michael Chen	Avid Reader	"I've discovered so many amazing stories here. The quality of content is outstanding!"
Emma Davis	New Author	"The community support and feedback helped me improve my writing tremendously."

The page title is "Choose Your Plan". It features three plan options: "Reader Free", "Premium Reader ₹199/month", and "Author Free". Each plan has a list of features and a "My Plan" button. A "Change Plan" button is located at the bottom center. The "Premium Reader" plan is highlighted with a blue "Most Popular" badge.

Plan	Cost	Features
Reader Free	Free	- Access to free books - Basic community features - Reading progress tracking - Book recommendations
Premium Reader	₹199/month	- Access to all premium content - Early access to new releases - Ad-free reading experience - Exclusive author interviews - Advanced reading analytics
Author Free	Free	- Publish unlimited books - Author analytics dashboard - Reader engagement tools - Community access

The page title is "Ready to Begin Your Story?". It encourages users to join the platform with the message: "Join thousands of authors and readers who have already discovered the magic of PenToPublic. Your next great adventure in literature starts here." It features two buttons: "Join Now - It's Free!" and "Already a Member?". The footer includes the PenToPublic logo, the tagline "Connecting authors and readers through the power of storytelling.", and a copyright notice: "© 2024 PenToPublic. All rights reserved."

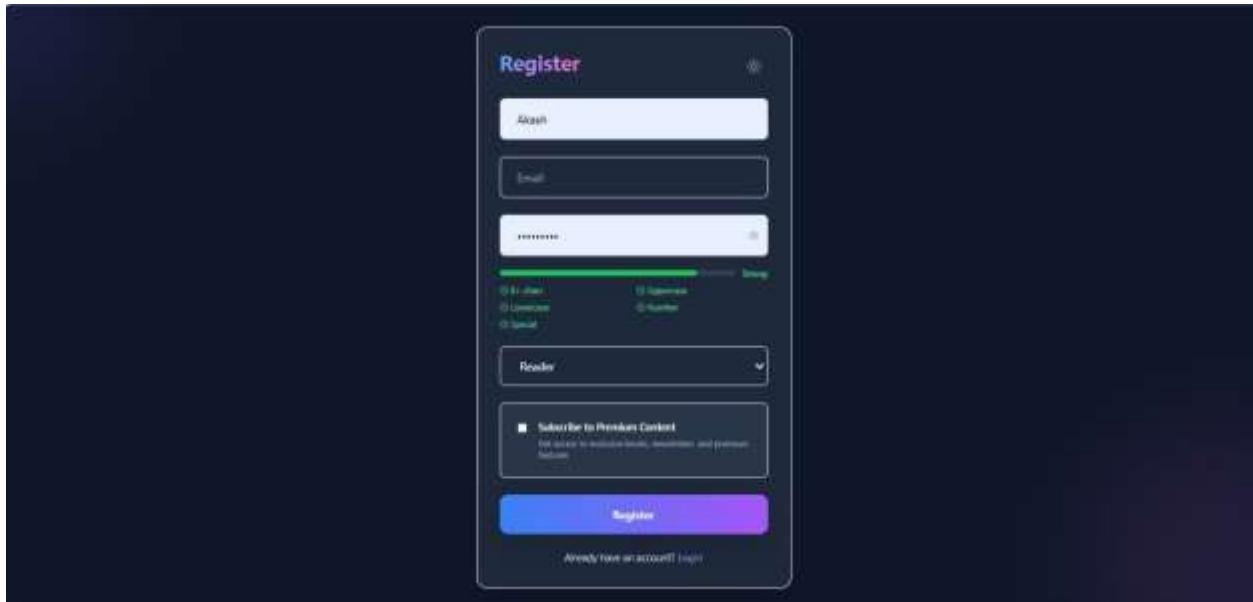
About :

The screenshot shows the 'About' page of the PenToPublic website. At the top, there is a dark header bar with the PenToPublic logo on the left and navigation links for 'Home', 'About', and 'Contact' on the right. Below the header, a sub-header reads 'Sharing your creativity, ready to read or writing... or both!' followed by a small image of a person reading. The main content area has a dark background and features a large, bold title 'About PenToPublic'. Below the title, two paragraphs of text explain the platform's mission: 'PenToPublic is your creative publishing platform, designed to empower authors and readers alike. Whether you're a budding writer or an enthusiastic reader, our platform connects words to hearts.' and 'We believe in giving everyone the power to share their voice with the world — be it through stories, poems, or knowledge.'.

Contact Us :

The screenshot shows the 'Contact Us' page of the PenToPublic website. The layout is similar to the 'About' page, with a dark header bar at the top containing the PenToPublic logo and navigation links for 'Home', 'About', and 'Contact'. A sub-header below the header includes the text 'Share, connect, write, read & live the pen-to-public life!'. The main content area features a large, bold title 'Contact Us'. Below the title is a form with three input fields: 'Your Name', 'Your Email', and 'Your Message'. A large blue button at the bottom of the form is labeled 'Send Message'.

Register :



Admin Dashboard :

A screenshot of the Admin Dashboard for PenToPublic. The top navigation bar includes links for Home, About, Contact, and Admin User. The main dashboard has a title "Dashboard Overview" and a subtitle "Manage books and monitor platform activity". It features several cards: one for API endpoints (0), another for book status (Downloaded, Pending Books: 0, Authors: 0, Readers: 0, Books: 0), and two for book statistics (Total Books: 8, Approved: 8, Pending: 0, Rejected: 0). At the bottom is a card for user statistics.

Author Dashboard :

The screenshot shows the 'Author Dashboard' section of the PenToPublic website. At the top, there's a navigation bar with links for 'Home', 'About', 'Contact', and a user icon. Below that, a sub-navigation bar shows 'Author User'. The main area is titled 'Upload New Book' and contains the following fields:

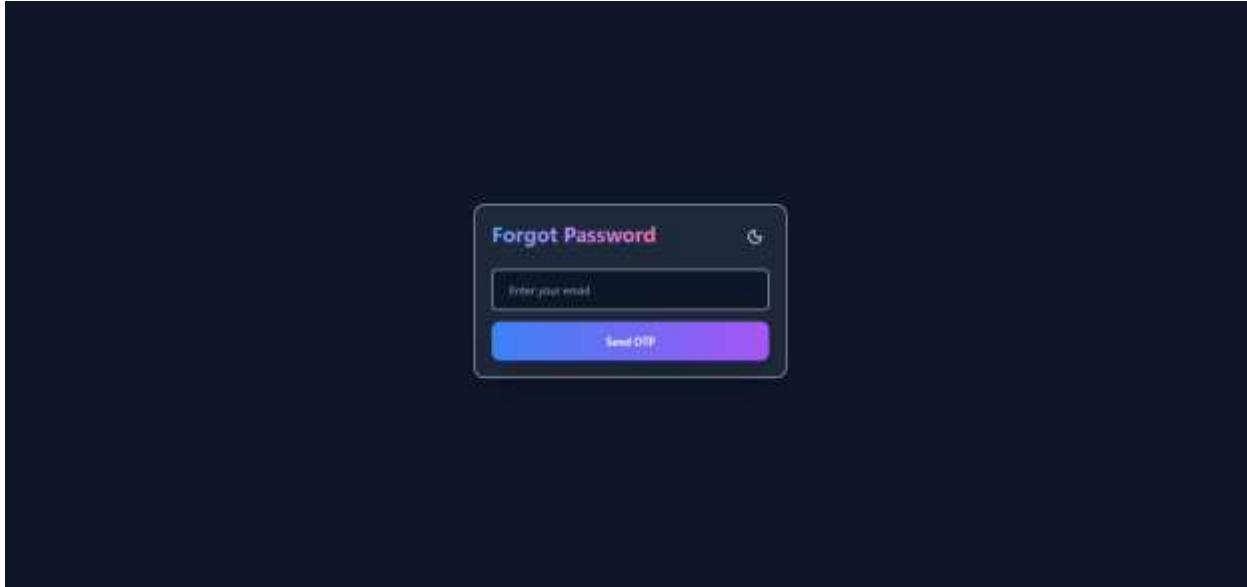
- Title:** An input field with placeholder text 'Enter book title'.
- Cover Image URL:** An input field with placeholder text 'https://example.com/cover.jpg'.
- Description:** A text area with placeholder text 'Describe your book...'.
- PDF URL:** An input field with placeholder text 'https://example.com/book.pdf'.
- Category:** A dropdown menu set to 'Spiritual'.
- Free Book:** A checked checkbox.
- Audio Book:** An unchecked checkbox.

Reader Dashboard :

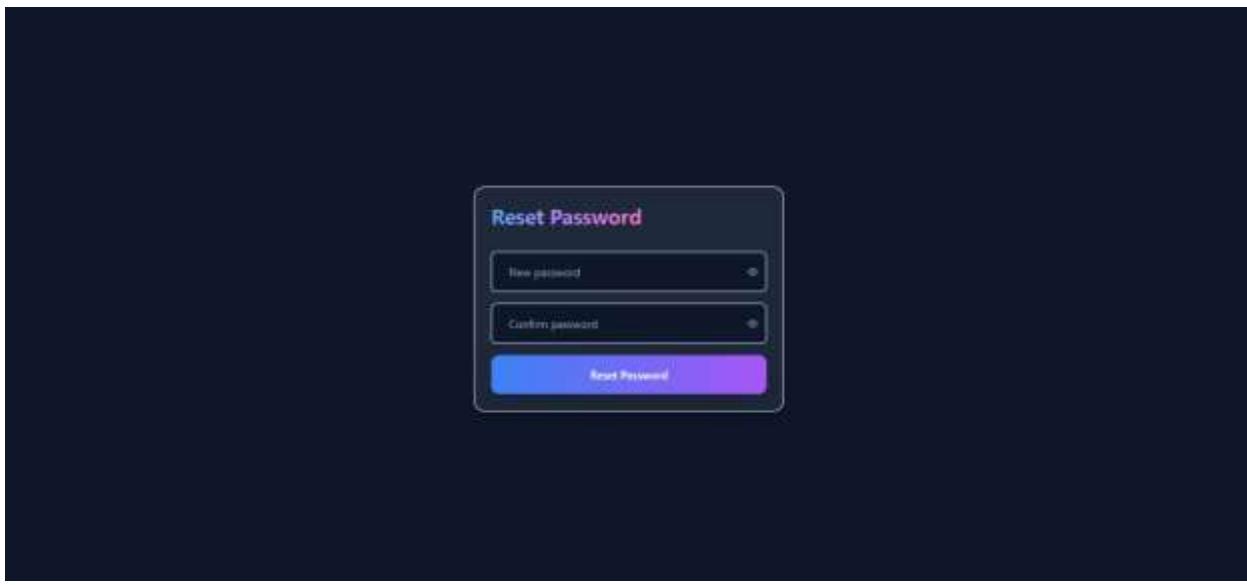
The screenshot shows the 'Reader Dashboard' section of the PenToPublic website. At the top, there's a navigation bar with links for 'Home', 'About', 'Contact', and a user icon. Below that, a sub-navigation bar shows 'A reader'. The main area displays a list of books under the heading 'All Books (8)'. Each book is represented by a card:

- The Alchemist**: 'Follow the journey of Santiago, a young Andalusian...'. Published on 01/01/2023. Buttons: 'Read' (green), 'Preview' (blue).
- The Witch of Portobello**: 'The Witch of Portobello follows the mysterious journey of Helen...'. Published on 01/01/2023. Buttons: 'Read' (blue), 'Preview' (orange).
- The Palace of Illusions**: 'The Palace of Illusions is a epic retelling of the Mahabharata...'. Published on 01/01/2023. Buttons: 'Read' (blue), 'Preview' (orange).
- Can Can Fly**: 'Can wings to fly and meet the story-tell when it's over come...'. Published on 01/01/2023. Buttons: 'Read' (green), 'Preview' (blue).

Forgot Password:



Password Reset :



Verify Otp:



9. References :

Books :

1. "Clean Architecture" by Robert C. Martin
→ For understanding scalable and maintainable backend architecture.
2. "Designing Data-Intensive Applications" by Martin Kleppmann
→ For database design, scalability, and performance optimization.
3. "You Don't Know JS" (book series) by Kyle Simpson
→ For frontend JavaScript fundamentals, especially if using React.

Online Platforms and Tutorials :

Area	Reference Link
Full-Stack Development (MERN/ASP.NET)	freeCodeCamp , Microsoft Learn
Database Design	Vertabelo Blog , DBDesigner
REST API with ASP.NET Core	Microsoft Docs - ASP.NET Core Web API
User Authentication	Auth0 Tutorials , JWT Introduction
Payment Gateway Integration (Razorpay Demo)	Razorpay Docs
Cloud Deployment (Azure)	Azure DevOps Docs , Azure App Service