

1. Introduction

- **Platform Name:** Book Exchange Platform
- **Purpose:** The Book Exchange Platform is a community-driven application designed to facilitate the exchange of physical books between users. It allows users to list books they wish to exchange, search for books they want to receive, and manage the exchange process through the platform.
- **Target Audience:** The platform is aimed at book lovers, students, libraries, and anyone interested in exchanging books.
- **Key Features:**
 - **User Registration & Authentication:** Users can sign up, log in, and manage their profiles.
 - **Book Listings:** Users can add books to their personal library, view available books, and provide details like title, author, condition, and genre.
 - **Search & Filter:** Users can search for books by title, author, genre, and location.
 - **Exchange Requests:** Users can request to exchange books with others, accept or decline requests, and communicate with other users via messaging.
 - **Rating & Reviews:** Users can rate and review exchanges to build trust within the community.

2. System Architecture

- **Frontend:**
 - **Framework:** React.js
 - **Styling:** Tailwind CSS or Bootstrap
 - **State Management:** Redux or Context API
 - **Main Components:**
 - **Home Page:** Displays featured books and popular genres.
 - **Search Page:** Allows users to search for books.
 - **Profile Page:** User profile management, including their listed books and exchange history.
 - **Exchange Management:** Interface for managing exchange requests, messaging, and reviews.
- **Backend:**
 - **Framework:** Node.js with Express.js
 - **Database:** MongoDB for storing user data, book listings, and exchange history.
 - **Authentication:** JWT (JSON Web Tokens) for secure user authentication.

- **APIs:**
 - **User Management API:** Handles user registration, login, and profile updates.
 - **Book Management API:** Manages book listings, including adding, updating, and deleting books.
 - **Search API:** Handles search queries and filtering.
 - **Exchange API:** Manages exchange requests, messaging, and reviews.
- **Third-Party Services:**
 - **Email Service:** SendGrid or similar service for notifications and communication.
 - **Payment Gateway (Optional):** Stripe or PayPal for handling any fees associated with exchanges.
 - **Geolocation API:** For locating nearby users for in-person exchanges.