Online Tickets Reservation System for Cinema Halls

Software Requirements Specification

Version 1.0

Submitted in Partial Fulfillment for the Award of Degree of Bachelor of Technology in Information Technology from Rajasthan Technical University, Kota

MENTOR:

Mr. Vipin Jain

(Associate Professor, Dept. of Information Technology)

COORDINATOR:

Dr. Priyanka Yadav

(Assistant Professor, Dept. of Information Technology)

SUBMITTED BY:

Aditya Pratap Singh (21ESKIT007)

Aman Jain (21ESKIT013)

Ayush Jhawar (21ESKIT028)

DEPARTMENT OF INFORMATION TECHNOLOGY

SWAMI KESHWANAND INSTITUTE OF TECHNOLOGY,MANAGEMENT & GRAMOTHAN

Ramnagaria (Jagatpura), Jaipur – 302017

SESSION 2024-25

Revision History

Date	Version	Description	Author
28/Nov/24	1.0	Initial version of the SRS created	Ayush Jhawar

Table of Contents

1. Introduction

The introduction provides an overview of the Software Requirements Specification (SRS) for the Online Cinema Hall Ticket Booking System. This document describes the purpose, scope, key definitions, references, and technologies used. It serves as a foundation for understanding the project and outlines the initial requirements for the system, which is currently in the early stages of development.

1.1 Purpose

The purpose of this document is to outline the functional and non-functional requirements of the Online Cinema Hall Ticket Booking System. This system aims to provide users with a platform to register, log in, and access cinema ticket booking features. In this initial phase, the project focuses on implementing a secure and functional login module.

1.2 Scope

The Online Cinema Hall Ticket Booking System is designed to simplify and streamline the ticket booking process for cinema halls. At this stage, the scope includes:

- User registration and login functionality.
- Secure authentication and user data management.
- Future development will extend to ticket selection, payment gateways, and cinema scheduling.

The system will serve customers, administrators, and cinema owners, eventually offering a complete solution for managing ticket reservations online.

1.3 Definitions, Acronyms and Abbreviations

- SRS: Software Requirements Specification – A document detailing software requirements.
- OCHTBS: Online Cinema Hall Ticket Booking System – The project name.

- DBMS: Database Management System – Software for managing databases (e.g., MySQL).
- UI: User Interface – The visual and interactive part of the system.
- HTTP/HTTPS: Protocols for communication between web browsers and servers.
- IDE: Integrated Development Environment – Tools for software development (e.g., Eclipse).
- JSP: Java Server Pages – A technology for dynamic web applications.
- SQL: Structured Query Language – Used for managing databases.
- CRUD: Create, Read, Update, Delete – Basic database operations.

1.4 Technologies to be used

This project utilizes a combination of modern web technologies, frameworks, and tools to ensure an efficient, scalable, and secure Online Cinema Hall Ticket Booking System. The following technologies will be used in the development:

- HTML, CSS3, Tailwind CSS (V1.93) – These are used for structuring and designing the user interface of the website. Tailwind CSS helps to build a responsive and attractive layout.
- ReactJS (V14) – ReactJS will be used as the main frontend framework, enabling efficient development of the user interface through its component-based architecture and making it easier to manage dynamic content.
- PostgreSQL (V17) – PostgreSQL will serve as the relational database management system for storing user data, movie information, ticket bookings, and other essential information for the system.

- Docker (V3) – Docker will be used for containerizing the application, ensuring it can be easily deployed and run in any environment, improving consistency across different stages of development and deployment.

1.5 Overview

This SRS document outlines the requirements for the "Online Cinema Hall Ticket Booking System." It includes:

1. Literature Survey: Review of related work and analysis of existing systems.
2. Specific Requirements: Functional, non-functional, hardware, and software requirements.
3. System Architecture: Overview of client-server architecture and communication interfaces.
4. Design and Implementation: Diagrams and models for system design, including data flow and class diagrams.
5. Supporting Information: Additional relevant data, references, and appendices.
6. Conclusion & Future Scope: Summary and future improvement opportunities.
7. Concerns / Queries: Any project-related doubts or issues.

2. Literature survey

This section provides an overview of the existing research, technologies, and systems relevant to the "Online Cinema Hall Ticket Booking System." The literature survey identifies the capabilities of current systems, knowledge gaps, and areas for improvement to define the foundation for future development.

2.1 Review of Related Work

- **Existing Systems:**
    - Platforms like BookMyShow, Fandango, and TicketNew are recognized leaders in the online ticket booking domain.
    - They offer features such as real-time seat availability, movie recommendations, integrated payment options, and robust user management.
    - Strengths of Current Platforms: Comprehensive functionalities, intuitive user interfaces, and advanced security mechanisms.
    - Weaknesses Identified: Lack of customization for small-scale cinema halls and limited focus on region-specific requirements.
- **User Authentication Techniques:**
    - Authentication protocols like OAuth, JWT (JSON Web Tokens), and two-factor authentication (2FA) ensure secure and user-friendly access to platforms.
    - JWT is particularly effective for single-page applications like this project, ensuring secure data transmission and efficient session management.
- **Frontend and Backend Technologies:**
    - Most modern systems utilize technologies like ReactJS and Node.js for dynamic frontend experiences and scalable backend processes.
    - The project's current technology stack aligns with industry standards.

2.2 Knowledge gaps

- **Functionality Limitations:**
  - The project is in its early phase, with only the login and dashboard functionalities implemented.
  - Features like movie booking, seat selection, and payment gateways are yet to be developed, which limits usability compared to existing systems.
- **Scalability:**
  - While platforms like BookMyShow cater to millions of users, this project is currently designed for smaller user bases.
  - Scalability challenges need to be addressed in future iterations.
- **Security Enhancements:**
  - Though JWT-based login is implemented, other advanced security practices, such as token refresh mechanisms, role-based access control, and data encryption, are yet to be incorporated.

2.3 Comparative Analysis

- **Existing Systems vs. Current Project:**
  - Existing platforms are mature, offering end-to-end ticket booking solutions.
  - In contrast, this project focuses on foundational elements like user authentication and dashboard features at this stage.
- **Technological Comparison:**
  - Current systems employ cutting-edge cloud-based architectures and serverless computing.
  - The project, being in the initial stages, uses a simplified client-server model but can evolve with containerization and distributed databases.

2.4 Summary

The initial focus of this project is on building a secure and scalable user authentication system, with a dashboard to facilitate future functionalities. While current systems set a high benchmark, this project aims to offer a tailored, cost-effective solution for smaller cinema halls. As development progresses, additional features like booking, payment, and user analytics will be integrated to enhance usability and competitiveness.

3. Specific Requirements

This section outlines the functional, non-functional, hardware, software requirements, and other specifications necessary for the initial version of the Online Cinema Hall Ticket Booking System.

3.1 Functional Requirement

- **User Authentication**:
    - Users must be able to create an account, log in, and log out securely.
    - Passwords must be encrypted and stored securely.
    - Account recovery via email should be available.
- **Dashboard**:
    - After login, users should be directed to a dashboard with basic navigation.
    - The dashboard should allow users to view and manage their profiles.
- **Admin Management (Initial stage)**:
    - Admin can manage basic user accounts (view, delete users).

3.2 Non Functional Requirements

- **Security**:
    - Secure data transmission using HTTPS.

- Passwords must be hashed before storage.

- **Performance**:
  - The system should handle at least 50 concurrent users.

- **Usability**:
  - The system should have an intuitive user interface for both the user and admin.

- **Scalability**:
  - The system must be designed with future features in mind (movie booking, payment processing).

3.3 Hardware Requirements

- **Client**:
  - Any device with a modern browser (desktop, laptop, tablet).
- **Server**:
  - A web server supporting Node**.**js.
  - A database server running PostgreSQL.

3.4 Software Requirements

- **Frontend**:
  - HTML, CSS (Tailwind CSS), ReactJS for the user interface.
- **Backend**:
  - Node.js for handling backend operations.
- **Database**:
  - PostgreSQL for storing user data and system configurations.
- **Authentication**:
  - JWT (JSON Web Tokens) for secure user authentication.

3.5 Agile Methodology

The project follows Agile methodology, with iterative development cycles, focusing initially on core features (authentication) before gradually adding others (movie listings, booking, payments).

3.6 Business Process Model

Login and Registration Flow:

- User logs in or registers, then accesses the dashboard.
- Admin manages users from the admin panel.

3.7 Supplementary Requirements

- Error Handling:
  - Clear error messages for incorrect login attempts or failed registration.
- Logging and Monitoring:
  - Basic logs for user activities (login attempts, account changes).

4.System Architecture

This section outlines the structural design of the Online Cinema Hall Ticket Booking System. It describes the major components, how they interact, and the technologies involved. Given that the project is in its initial stage, the architecture will focus on the login page and dashboard functionalities, with future expansion planned for ticket booking, payments, and movie management.

4.1 Client-Server Architecture

The system follows a client-server architecture where the client is the user's web browser, and the server handles business logic, user authentication, and database interactions.

- **Client-Side**:
  - The user interacts with the system through a web interface built with ReactJS.

- The user sends requests to the server (e.g., login requests, fetching user data) through HTTP.
- The front-end is responsible for presenting data to the user in a structured and user-friendly way.

- **Server-Side**:
  - Node.js acts as the server-side platform that processes requests from the client.
  - The server interacts with the PostgreSQL database to store and retrieve user data (e.g., user credentials, profile information).
  - The server is responsible for implementing business logic, such as authenticating users, managing sessions, and handling API requests.
- **Database**:
  - PostgreSQL is used to store user data (including login credentials and session information) and to support future features (movie details, ticket booking).
  - The database is accessed through the server using SQL queries.

4.2 Communication Interfaces

The communication between the client, server, and database follows a simple request-response model:

- **Client-Server Communication**:
  - HTTP/HTTPS protocols are used for communication between the front-end (client) and back-end (server).
  - The front-end sends RESTful API requests to the server for actions like user login and fetching profile data.

- The server responds with JSON data, which is processed by the front-end to update the user interface.

- **Server-Database Communication**:
  - The server communicates with the PostgreSQL database using SQL queries to perform CRUD (Create, Read, Update, Delete) operations.
  - ORM (Object-Relational Mapping) libraries, such as Sequelize, may be used for seamless interaction between the server and database.

5. Overall Description

This section provides a general overview of the Online Cinema Hall Ticket Booking System, offering context for the specific requirements detailed in Section 5. It covers the product's purpose, functions, constraints, user characteristics, and key assumptions, serving as a foundation for understanding the system.

5.1 Product feature

The Online Cinema Hall Ticket Booking System is designed as a web-based application to simplify the process of booking tickets for cinema shows. It offers a centralized platform for users to register, log in, and manage their bookings.

- Current Stage: The login page and a basic user dashboard have been developed.
- Future Enhancements: Booking management, payment gateway integration, and administrative functionalities.

The system is built using modern web technologies to ensure scalability, responsiveness, and ease of use.

5.2 Data Flow diagram

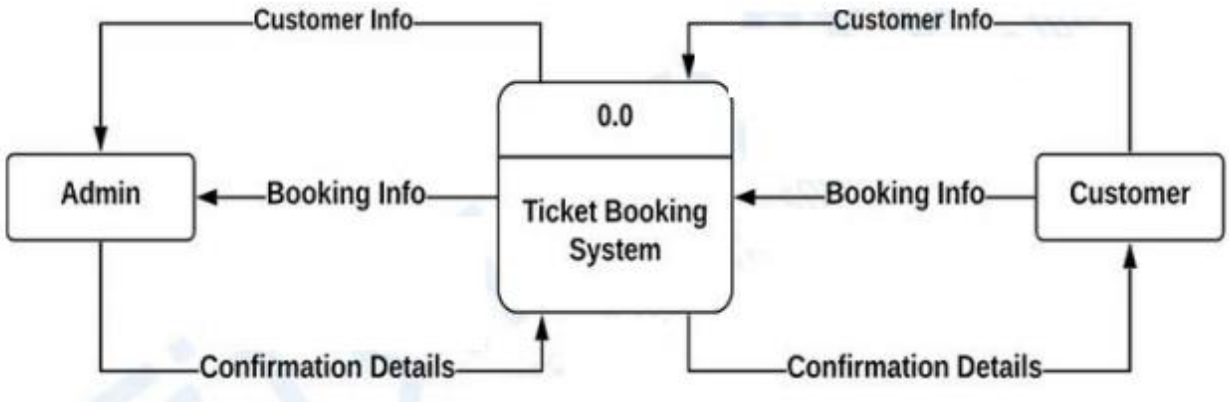

Fig: 5.2 Data Flow Diagram for Online Cinema Ticket Booking

5.3 E-R Diagram

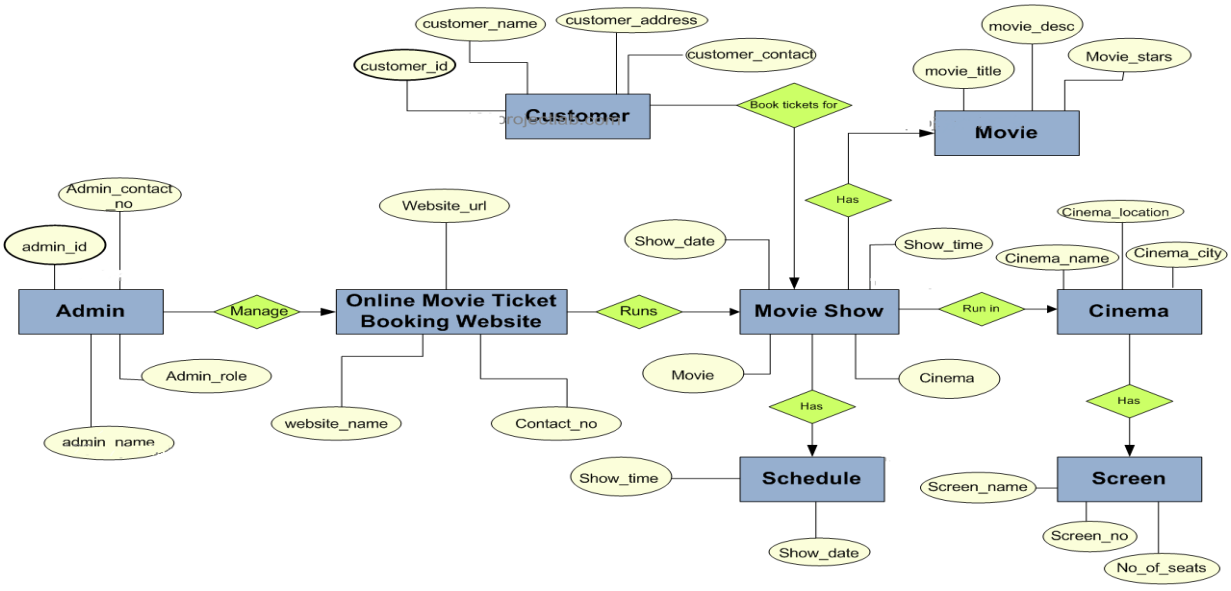

Fig: 5.3 E-R Diagram for Online Cinema Ticket Booking

5.4 Use-Case Model

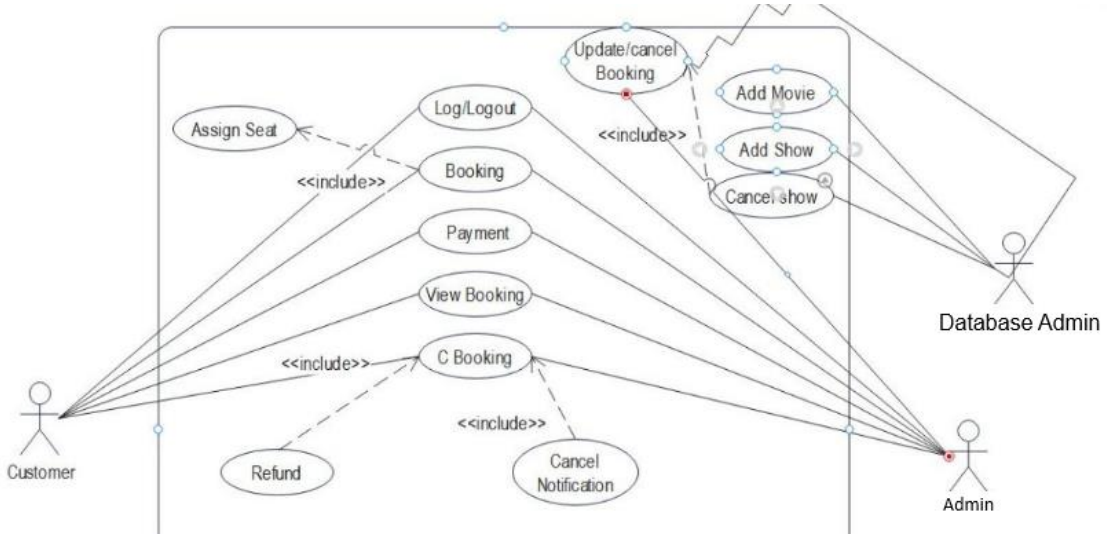

Fig: 5.4 Use-Case Diagram for Online Cinema Ticket Booking

5.5 Assumptions and Dependencies

- Users will have stable internet access.
- The backend relies on PostgreSQL, ReactJS, and Node.js for functionality.

6. Supporting Information

This section provides additional resources to SRS.

- W3C – Homepage.

  Publisher: World Wide Web Consortium

  Date: [Accessed: Aug. 14, 2024]

  Source: https://www.w3.org/

- React – Homepage.

  Publisher: React Team

  Date: [Accessed: Sep. 3, 2024]

Source: https://reactjs.org/

- Node.js – Homepage.

  Publisher: Node.js Foundation

  Date: [Accessed: Oct. 10, 2024]

  Source: https://nodejs.org/en/

- PostgreSQL – Homepage.

  Publisher: PostgreSQL Global Development Group

  Date: [Accessed: Nov. 1, 2024]

  Source: https://www.postgresql.org/

- Django – Homepage.

  Publisher: Django Software Foundation

  Date: [Accessed: Sep. 18, 2024]

  Source: https://www.djangoproject.com/

- GitHub – Homepage.

  Publisher: GitHub, Inc.

  Date: [Accessed: Sep. 10, 2024]

  Source: https://github.com/

7. Conclusion & Future Scope:

Conclusion:

The Online Cinema Hall Ticket Booking System aims to streamline the movie ticket booking process, providing users with a convenient, efficient, and user-friendly platform. Currently, the

project is in its initial stages, with the login functionality and dashboard successfully implemented.

Future Scope:

1. **Feature Enhancements:**
    - Integration of dynamic seat selection and real-time booking features.
    - Implementation of secure payment gateways for online transactions.
    - Development of personalized user dashboards with booking history and preferences.
2. **Scalability and Optimization:**
    - Expanding the system to handle multiple cinema halls and locations.
    - Optimizing database queries for faster performance during peak times.
3. **Technological Advancements:**
    - Incorporating AI for movie recommendations based on user preferences.
    - Deploying the application on a cloud platform for enhanced scalability and reliability.
4. **Improved User Experience:**
    - Designing a responsive interface for seamless access across devices.
    - Introducing multi-language support to cater to diverse user demographics.

This project has immense potential to grow into a robust and widely-used platform for moviegoers.

8. Concerns / Queries / Doubts if any:

Currently, there are no concerns or queries regarding the project. Future updates or

challenges encountered during the development process will be addressed and documented as needed.