

Project Based Evaluation

Software Requirements Specification

Semester-IV (Batch-2023)

Movie Ticket Booking System

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1. Introduction

1.1 Purpose

The main goal of this Software Requirements Specification (SRS) document is to clearly outline the functional and non-functional requirements of the **Movie Ticket Booking System**. It serves as a critical reference for the system's design, development, testing, and deployment processes. This document is a living document and may be updated as the project progresses to reflect new insights and changes.

It consolidates all specific requirements, constraints, workflows, and business rules that must be adhered to throughout the project. The purpose is to ensure that all stakeholders—developers, testers, UI/UX designers, business analysts, project managers, and quality assurance teams—have a shared and accurate understanding of the system's goals and expected features. This common understanding helps minimize miscommunication and enhances decision-making by providing clear expectations for usability, scalability, performance, and compliance with any applicable regulations or user needs.

1.2 Document Conventions

This document follows standard formatting rules to enhance clarity and consistency across all sections. **Bold text** is used for headings and to emphasize key terms, while *italicized text* highlights technical terms when introduced for the first time. Numbered headings (e.g., 1.1, 2.3) organize the document into a logical and easily navigable structure.

Bullet points and numbered lists are used to break down detailed information into digestible parts. Where applicable, **diagrams**, **flowcharts**, and **tables** are included to visually represent system workflows, data structures, and user interactions.

These conventions ensure that the document is accessible and easy to understand for a wide range of stakeholders, including developers, designers, project managers, and clients—regardless of their technical background.

1.3 Intended Audience and Reading Suggestions

This SRS is intended for a diverse audience, each with different roles and responsibilities throughout the development of the **Movie Ticket Booking System**. It provides in-depth details on system features, functional requirements, and technical architecture, which are especially useful for **software developers**, **testers**, and **technical architects** during the design, development, and testing phases.

Business analysts and **project managers** will use this document to gain a clear understanding of the project scope, timelines, and expected deliverables, helping them manage resources, budgets, and schedules effectively. Sections related to **security**, **user data privacy**, and **payment compliance** are of particular interest to **compliance officers** and **auditors** who ensure the system adheres to relevant standards and legal frameworks.

Furthermore, explanations of the **user interface**, **booking process**, and **help features** are beneficial for **customer support teams** and **end users**, even though they may not need to dive into the technical details.

To make navigation easier:

- **Technical team members** should focus on Sections **2 through 5**, which detail the system's features, architecture, and data handling.
- **Project managers, stakeholders, and regulatory reviewers** may prioritize Sections **1 and 2** for a high-level understanding of the system.

1.4 Project Scope

- A modern, user-friendly Movie Ticket Booking System that allows users to search, view, and book movie tickets across multiple cinema chains and locations.
- Designed with scalability and security as core priorities to accommodate large numbers of users and secure payment transactions.
- Serves both individual customers and theatre administrators, supporting personalized user experiences and backend management tools.
- Provides real-time movie listings, seat availability updates, and instant booking confirmations.

- Features include:

Movie search and filter by genre, language, rating, showtime, and location

Seat selection, ticket pricing, and booking summaries

Multiple payment options (credit/debit cards, UPI, net banking, wallets)

Booking history, ticket downloads, and cancellation options

- Integrates seamlessly with third-party systems such as:

Loyalty programs and coupon systems

- Accessible through web and mobile platforms, offering a consistent and responsive experience.
- Ensures data confidentiality, particularly for user information and payment details.
- Adheres to major compliance and security standards like PCI DSS for payment security and GDPR for data protection.
- Maintains high standards of system reliability, availability, and performance, even under peak usage conditions.
- Focuses on:

Intuitive user interfaces for all user types

Efficient customer support and helpdesk features

Robust backend architecture for real-time updates and high-volume traffic handling

2. Overall Description

2.1 Product Perspective

The **Movie Ticket Booking System** is a modern digital platform designed to simplify and enhance the movie ticket reservation experience for both customers and theatre operators. By digitizing the traditional in-person ticket booking process, it offers users a real-time, convenient way to search for movies, select seats, and complete secure transactions through web and mobile. The system is developed using a **modular architecture**, which allows for the independent development, testing, and deployment of its core components, including user management, movie listings, seat selection, and payment processing. This design approach supports Continuous Integration and Continuous Deployment (CI/CD), ensuring that updates and improvements can be made efficiently without disrupting overall system functionality. To support seamless operations, the system integrates with various third-party services through secure APIs. These include payment gateways for handling transactions, email and SMS platforms for notification delivery, and external systems for loyalty programs or promotional campaigns. The use of secure APIs ensures smooth communication with external services while maintaining data integrity and privacy.

2.2 User Classes and Characteristics

The **Movie Ticket Booking System** serves multiple user classes, each with unique needs and interactions with the system. **End users (customers)** are individuals who browse movie listings, select showtimes, and book tickets. These users are typically tech-savvy and seek a seamless, user-friendly experience across both web and mobile platforms. They value convenience, quick seat selection, real-time availability, and flexible payment options such as credit/debit cards, UPI, and digital wallets. Security is also a priority for customers, as they expect secure transactions and the protection of personal information. Customers often prefer personalized features like movie recommendations and timely notifications about bookings, reminders, and offer **Theatre administrators**, on the other hand, use the system to manage movie listings, showtimes, seat arrangements, and ticket sales. They are primarily focused on the operational aspects of the system and need tools to monitor real-time sales, generate reports, and manage customer inquiries. While they may not book tickets themselves, they rely heavily on the system's backend to ensure smooth theatre operations and customer

engagement. They also manage promotional content and pricing strategies. Lastly, **customer support agents** assist users with booking issues, cancellations, and account management. They are knowledgeable about the system's functionalities and have access to tools that allow them to help users efficiently, whether it's guiding a customer through the booking process or resolving any issues with payments or refunds.

2.3 Design and Implementation Constraints

The development of the **Movie Ticket Booking System** is shaped by several key constraints that ensure the system is secure, scalable, and user-friendly. Since the system handles **personal user data** and **financial transactions**, it must comply with regulations such as **PCI DSS** for secure payment processing and **GDPR** for data protection and privacy.

Implementing **strong encryption standards**, secure **authentication protocols**, and continuous monitoring is essential to safeguard user information and prevent unauthorized access. One challenge is maintaining **real-time seat availability and updates** while ensuring data consistency and low latency, especially during high-demand periods such as blockbuster releases.

Another constraint is ensuring **cross-platform compatibility**. The system must perform consistently across a wide range of devices—including desktops, smartphones, and tablets—and support various browsers and screen sizes. This requires responsive design, efficient backend processing, and optimized APIs. Project timelines and budget limitations also affect the implementation. Developers must balance innovative features like AI-driven recommendations and chat support with reliable core functionalities like booking, payments, and notifications. Lastly, the system must be **scalable** to support a growing number of users, theatres, and transactions without degrading performance. Proper architectural planning, performance testing, and iterative validation are essential to meet both business and technical goals.

3. System Features

3.1 System Feature 1: User Authentication and Account Management

The **User Authentication and Account Management** module is a critical feature of the **Movie Ticket Booking System**, ensuring that only authorized users can access and manage their bookings. The authentication process begins with users registering by providing their personal information, which may include verifying their identity. Users then create a secure password, which is encrypted, and can further protect their accounts with multi-factor authentication (MFA) during login. Once authenticated, users are directed to a dashboard that provides real-time access to their booking history, upcoming movie showtimes, and ticket status. They can also update their personal information, modify their preferences, and manage linked payment methods. The system keeps detailed records of user activities, ensuring compliance with data protection regulations and enabling auditing if needed. The system is designed for scalability, supporting secure authentication even during peak times, such as major movie releases.

3.2 System Feature 2: Movie Booking and Payment

The **Movie Booking and Payment** feature enables users to select their desired movie, showtime, and seating preferences, and then securely process their payment. The system supports a variety of payment options, including credit/debit cards, digital wallets, and other online payment gateways. Users first choose their movie and showtime, then proceed to select their seats, which are displayed in real-time to reflect availability. The system validates the booking process to ensure accurate information, including seat selection, payment processing, and secure data handling. Once the payment is successful, users receive a digital ticket, which includes a unique booking ID, showtime details, and seating information. The system also supports automatic notifications sent to users via email or SMS, confirming their booking and providing reminders as the showtime approaches.

3.3 System Feature 3: Movie Listings and Showtimes

The **Movie Listings and Showtimes** feature provides users with an organized and up-to-date list of movies currently showing, along with their available showtimes. Users can filter movies based on genre, language, or release date, and can easily view the movie details, including

ratings, runtime, and cast. The system ensures that showtimes are accurate, adjusting dynamically based on theatre capacity and availability. Users can also view upcoming releases and set reminders for specific movies. theatre administrators have the ability to update and manage the movie listings, showtimes, and seat availability in real-time, ensuring that the system remains accurate and reflective of current offerings.

3.4 System Feature 4: Ticket Cancellation and Refunds

The **Ticket Cancellation and Refunds** feature allows users to cancel their movie bookings and request refunds when necessary. Once a booking is cancelled, the system processes the refund based on the theatre cancellation policy, which may depend on factors like the timing of the cancellation and ticket type. Users are informed of the cancellation policy upfront and are provided with clear instructions for initiating a refund request. After the cancellation is processed, a notification is sent to the user confirming the cancellation and the expected refund timeline. The system also ensures that cancelled tickets are removed from the seating chart, and seat availability is updated in real-time to reflect the change.

3.5 System Feature 5: Customer Support and Notifications

The **Customer Support and Notifications** module enhances user experience by providing seamless communication and issue resolution. A built-in AI-powered chatbot assists users with common queries, such as finding movie showtimes, managing bookings, and processing payments. For more complex issues, the system integrates a ticketing system that routes inquiries to live customer support agents. The system tracks all customer interactions and provides instant feedback, helping support teams resolve issues efficiently. Additionally, the notifications service keeps users informed about important events, such as successful bookings, upcoming movie showtimes, and promotional offers. Users are notified in real-time via email and SMS, ensuring they never miss important updates related to their movie experience. A feedback mechanism is also included, allowing users to rate their support experience and suggest improvements.

4. External Interface Requirements

4.1 User Interfaces

The **Movie Ticket Booking System** provides a seamless and user-friendly experience across all devices, ensuring accessibility and usability for customers using web or mobile platforms. The responsive web design adapts the layout, font sizes, and interactive elements to fit a variety of screen sizes, ensuring a consistent experience whether users access the system on desktops, laptops, or tablets. Native mobile apps for Android and iOS provide an optimized touch interface, utilizing mobile hardware features such as biometric authentication and push notifications to enhance security and user engagement. The system complies with accessibility standards, following the WCAG 2.1 AA guidelines, and includes features like screen reader compatibility, keyboard navigation, and customizable contrast modes to ensure full accessibility for users with disabilities. Throughout the development process, design consistency is maintained using a comprehensive style guide and detailed user interface specifications.

4.2 Hardware Interfaces

The **Movie Ticket Booking System** relies on enterprise-grade hardware to ensure high performance and reliability. The backend infrastructure is deployed on servers equipped with dual power supplies, multiple network interfaces, and backup storage arrays, providing redundancy to minimize the risk of service interruptions. These servers are capable of supporting virtualization and containerization technologies to ensure scalability and efficient resource management. The system also integrates with peripheral devices, such as ticket printers, barcode scanners, and payment terminals, to facilitate seamless ticket issuance and payment processing. Additionally, for enhanced security, hardware-based cryptographic modules may be utilized to manage sensitive information and encryption keys.

4.3 Software Interfaces

The **Movie Ticket Booking System** interfaces with external systems through secure APIs and service integrations to provide essential functionalities such as payment processing, showtime management, and notification delivery. RESTful APIs enable communication with external payment gateways, email and SMS services, and loyalty programs. These APIs adhere to security standards, using OAuth for secure authorization and JWT tokens for session management. Middleware components facilitate secure and efficient data flow between the front-end and back-end systems, ensuring transaction

integrity and consistency. The system includes comprehensive API documentation, with detailed examples, to support third-party integrations and application development.

4.4 Communications Interfaces

To safeguard user data and communication, the **Movie Ticket Booking System** employs SSL encryption over HTTPS, using the latest TLS protocols (TLS 1.2 or 1.3) to protect server-to-service communication. Internally, secure communication channels, such as VPNs or leased lines, are utilized to prevent unauthorized access when data is transferred between servers or external systems. The system integrates with a messaging gateway to deliver real-time notifications, such as booking confirmations, ticket reminders, and promotional offers, via email and SMS. This ensures that users are promptly informed about important updates related to their movie bookings.

5. Other Nonfunctional Requirements

Performance Requirements

Performance is a critical aspect of the **Movie Ticket Booking System**, ensuring that users can quickly and efficiently book tickets, even during high-demand periods such as new movie releases or peak booking hours. Standard pages, such as movie listings and seat selections, must load within three seconds, while high-priority actions like ticket booking, payment processing, and confirmation generation should be completed within five seconds under typical conditions. The system is designed to support at least 10,000 simultaneous users without noticeable degradation in performance. This is achieved through optimized database queries, caching mechanisms, and a horizontally scalable architecture. Regular performance tests—including load, stress, and endurance testing—are conducted to uncover potential bottlenecks. Dashboards with real-time performance metrics are integrated into the system to ensure compliance with service level agreements (SLAs) and monitor system health.

5.2 Safety Requirements

The **Movie Ticket Booking System** is designed with safety at its core, ensuring that user data and transactional integrity are always maintained. Data replication across multiple data ensures data resilience and mitigates the risk of data loss. A robust disaster recovery framework is in place, with defined Recovery Point Objectives (RPO) and Recovery Time Objectives (RTO) to ensure service continuity in case of system failures. The system also ensures session security by utilizing techniques like automated session expiration timers, encrypted session key protocols, and monitoring for non-standard session activities. Comprehensive backup strategies are in place to safeguard data, and regular disaster recovery drills ensure that the system can swiftly recover from any outages or failures.

5.3 Security Requirements

Security is a fundamental element of the **Movie Ticket Booking System**, ensuring that all user interactions, from browsing to payment, are protected from unauthorized access. Sensitive data, such as user details and payment information, is encrypted at rest using AES256 encryption, while TLS protocols are used to secure data during transmission. Multi-factor authentication (MFA) is required for user login to add an additional layer of security. Role-based access control (RBAC) ensures that

users can only access relevant features, reducing the risk of unauthorized access. All user actions, including login attempts and financial transactions, are logged securely for compliance audits. The system is subject to regular security assessments, including vulnerability scans, penetration testing, and third-party audits, to identify and address potential vulnerabilities. It also adheres to industry standards such as PCI DSS and GDPR, with continuous monitoring and updates to remain compliant with data protection laws.

5.4 Software Quality Attributes

The **Movie Ticket Booking System** is built with a strong focus on reliability, scalability, and usability. It is designed to achieve 99.9% uptime, supported by redundant systems and automated failover mechanisms to ensure continuous service availability. The system's architecture is based on microservices, allowing for modular updates and maintenance, minimizing the impact on the overall system during updates or component replacements. Scalability is embedded into the design, allowing for easy expansion across multiple servers and nodes as user demand grows. The system emphasizes usability, with an intuitive user interface that offers easy navigation, efficient workflows, and quick response times, ensuring that users can book tickets seamlessly and enjoy a hassle-free experience.

6. Other Requirements

The **Movie Ticket Booking System** must meet additional requirements to ensure durability, legal compliance, and adaptability to changing needs. Compliance with relevant laws, including data protection regulations and financial transaction standards, is a critical component of the system. Regular compliance audits are essential to ensure the system adheres to industry regulations and meets legal standards. Additionally, the system must support international users, offering multi-language and multi-currency functionality to accommodate global audiences. Data retention protocols are clearly defined within the system, ensuring that data storage, archiving, and deletion procedures are aligned with legal and regulatory requirements. The system supports real-time monitoring of both operational performance and security events, with detailed logging mechanisms that allow for the detection of issues early and the generation of timely compliance reports. These features are integral for meeting industry standards and regulatory expectations.

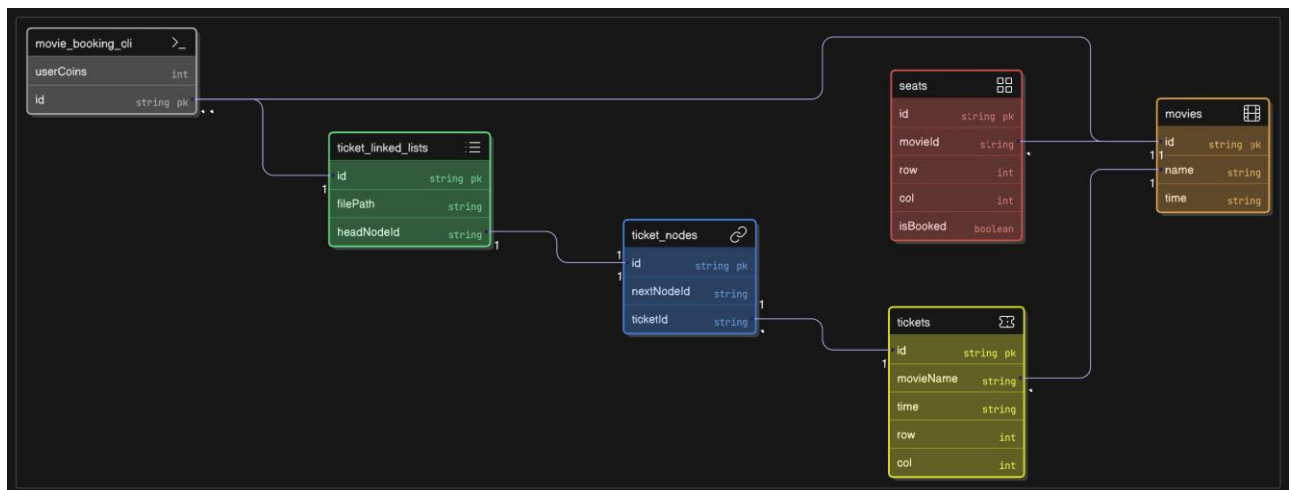


Fig: 1.1 Class Diagram

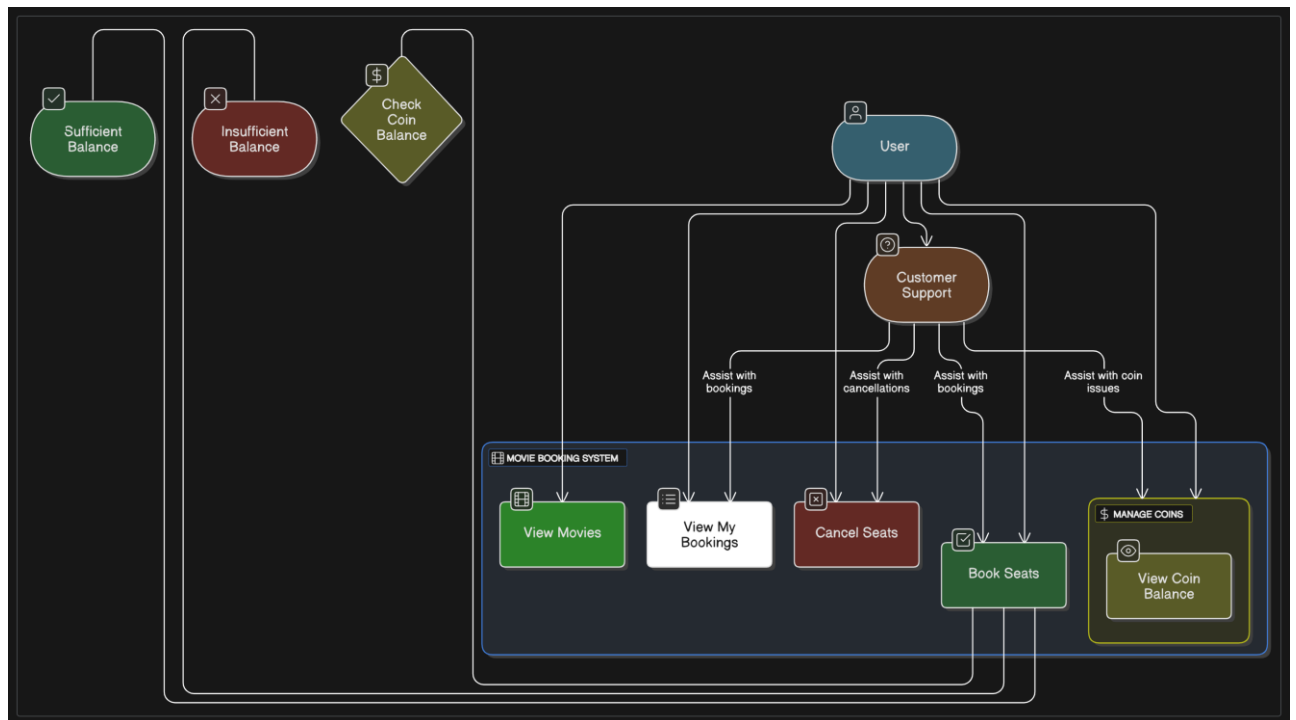


Fig 1.2 Use Case Diagram

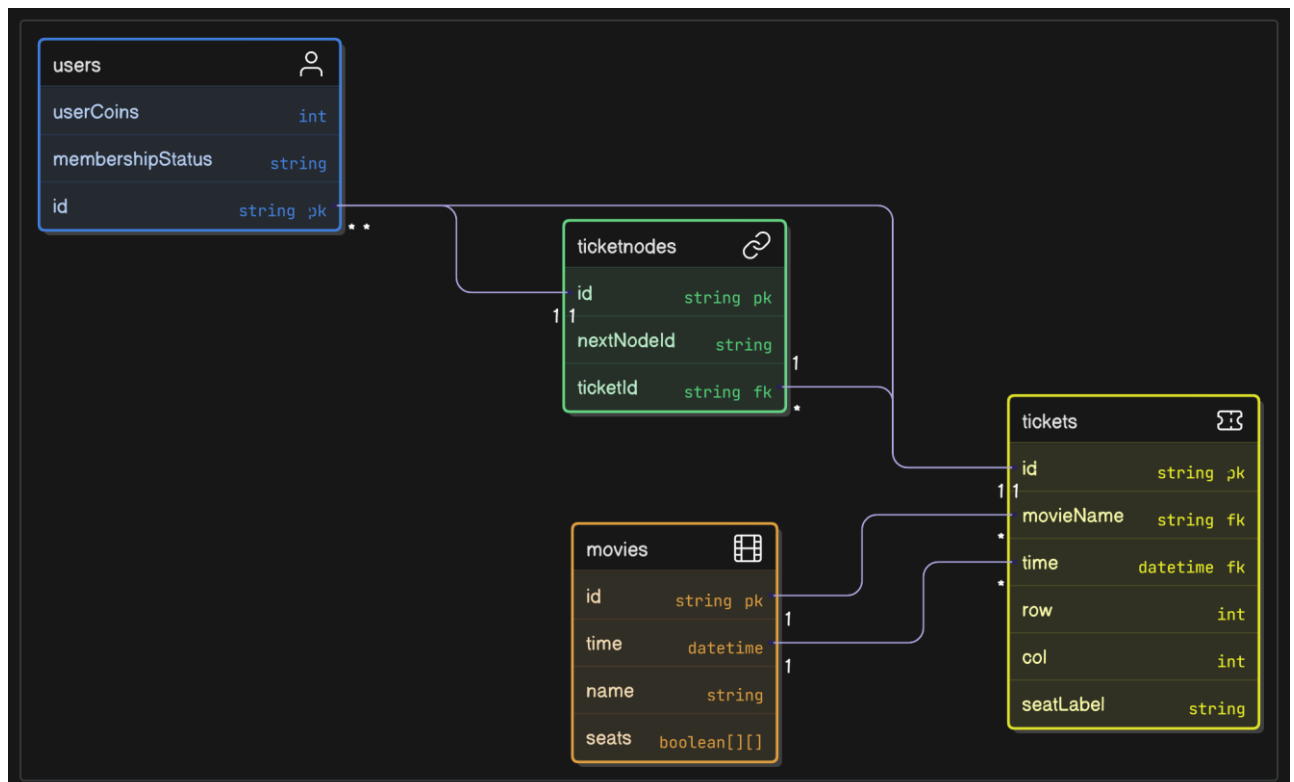


Fig 1.3 ER Diagram

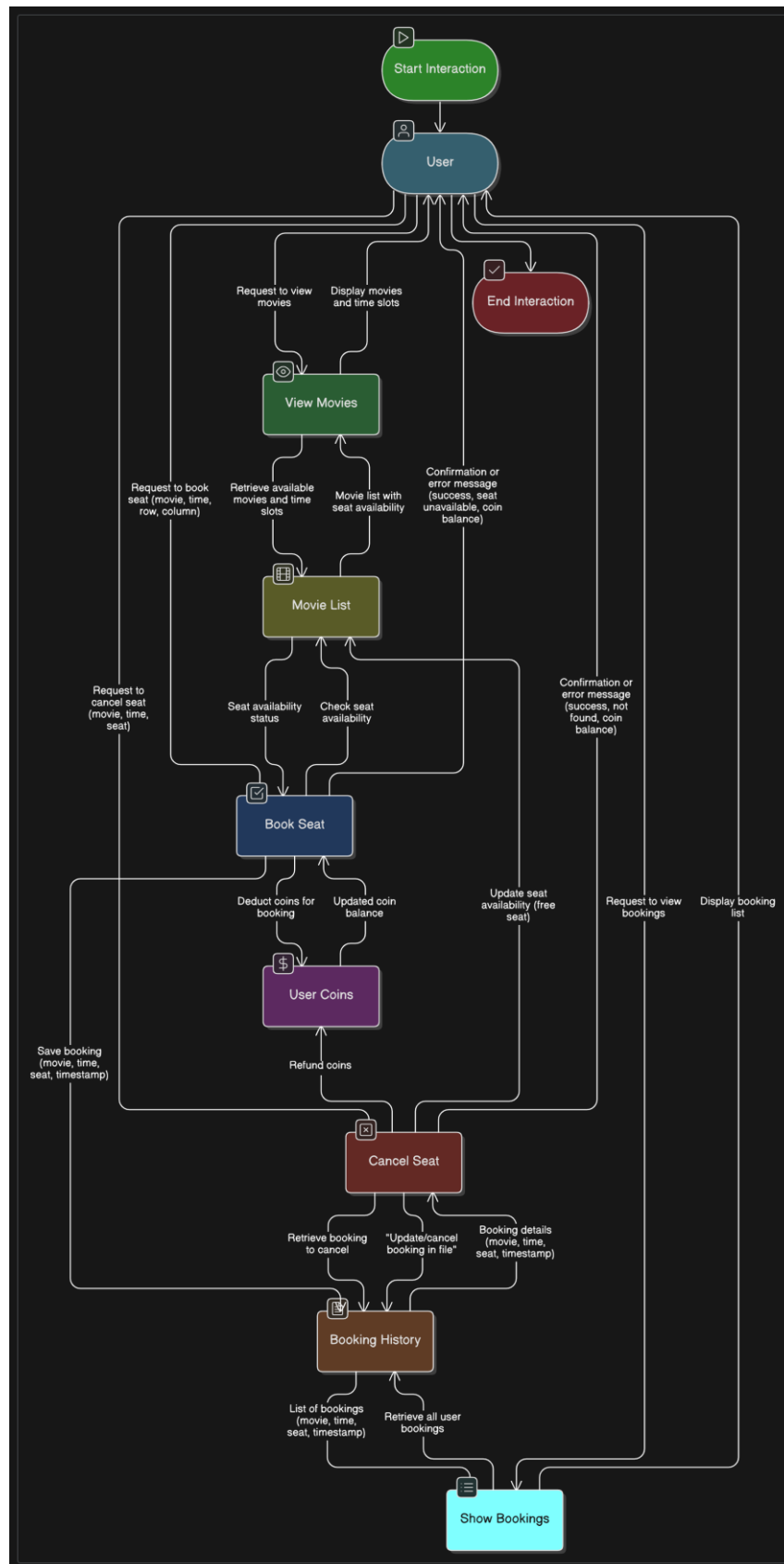


Fig: 1.4 Data Flow Diagram

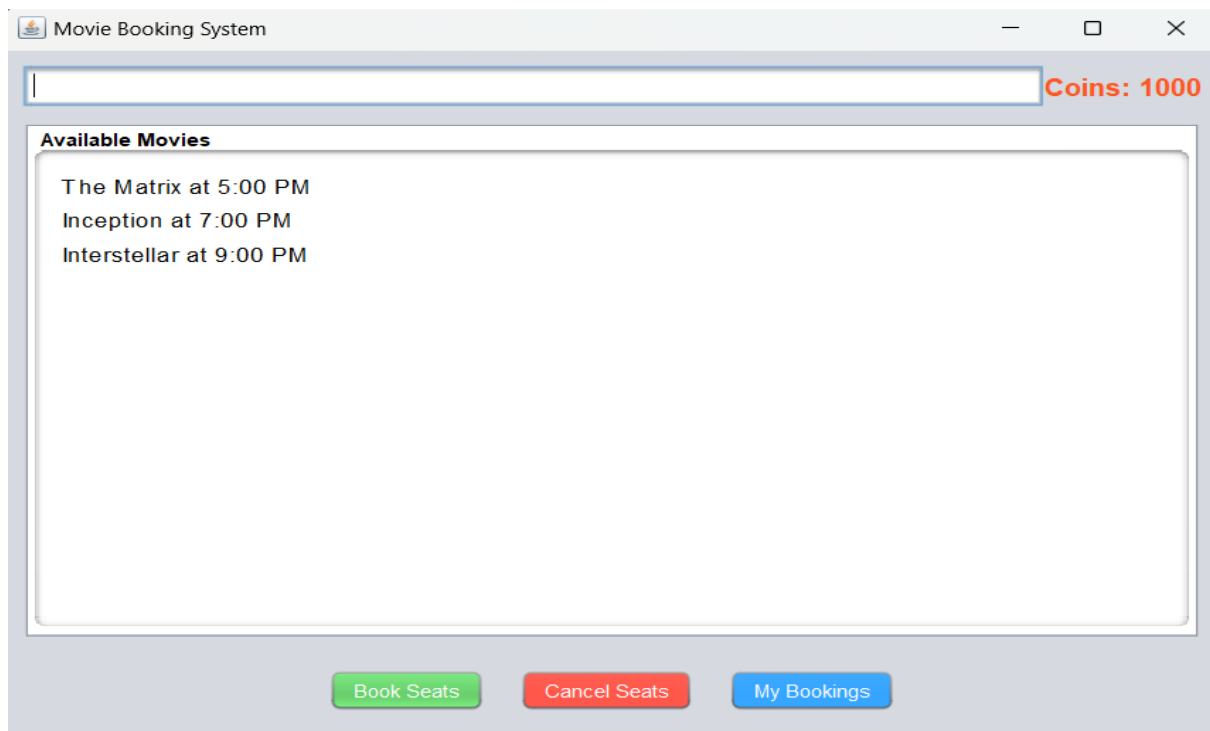


Fig:1

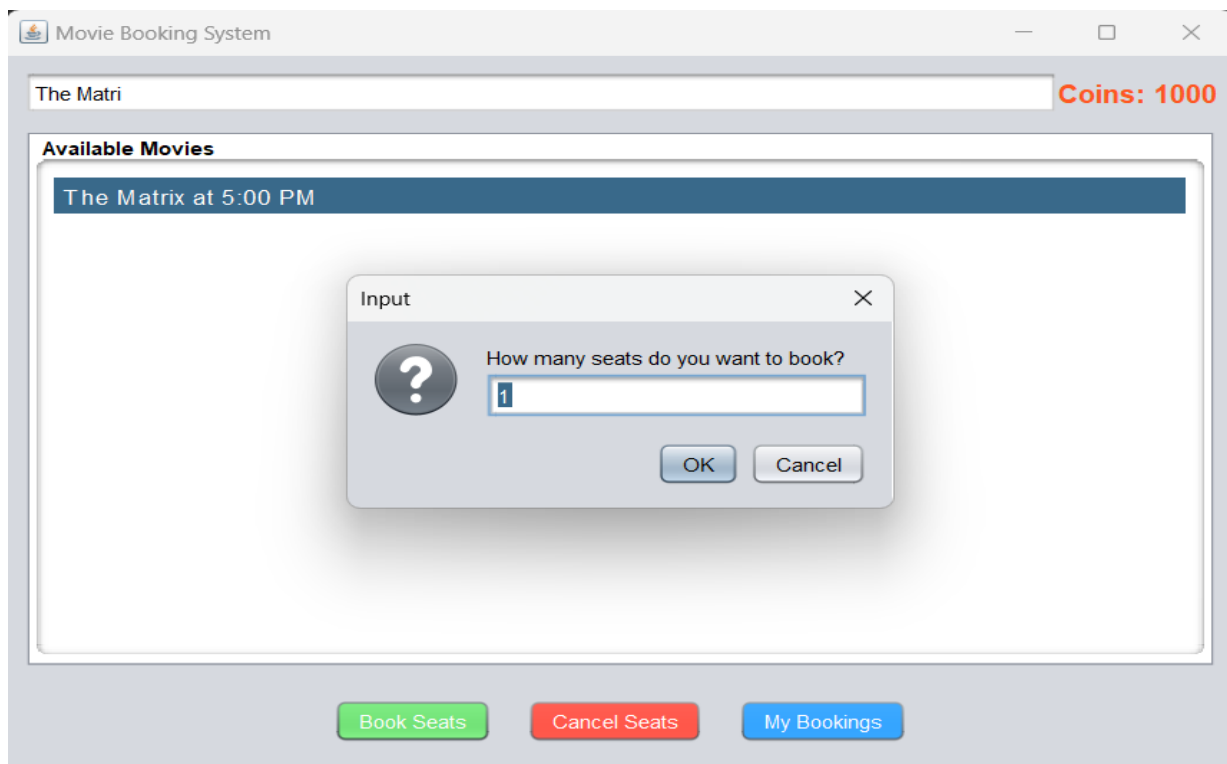
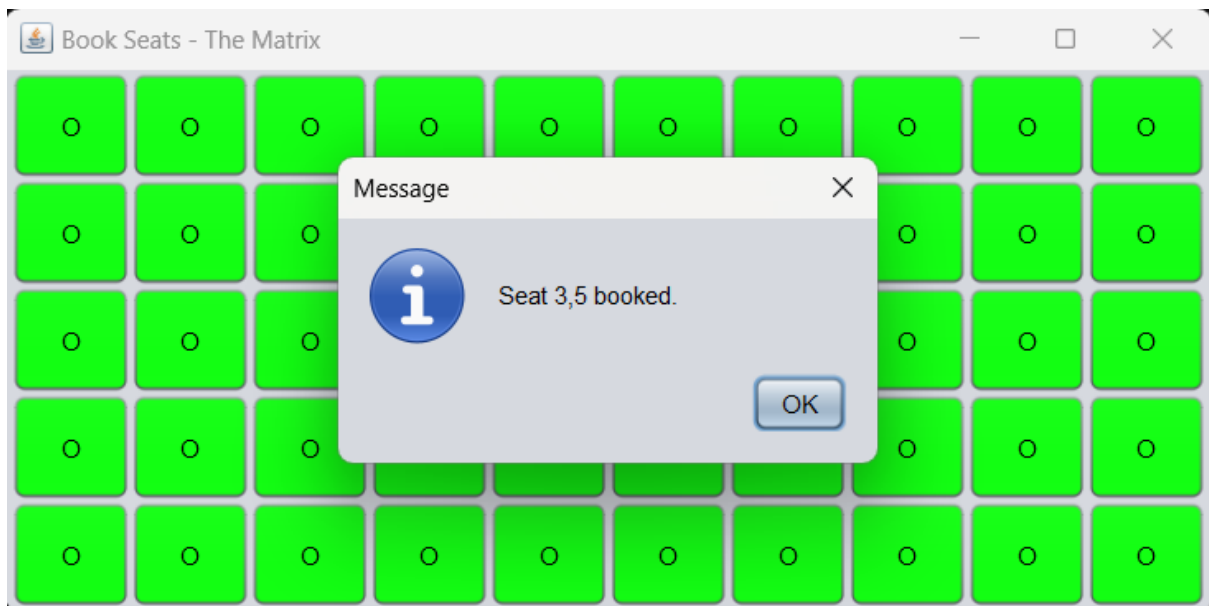
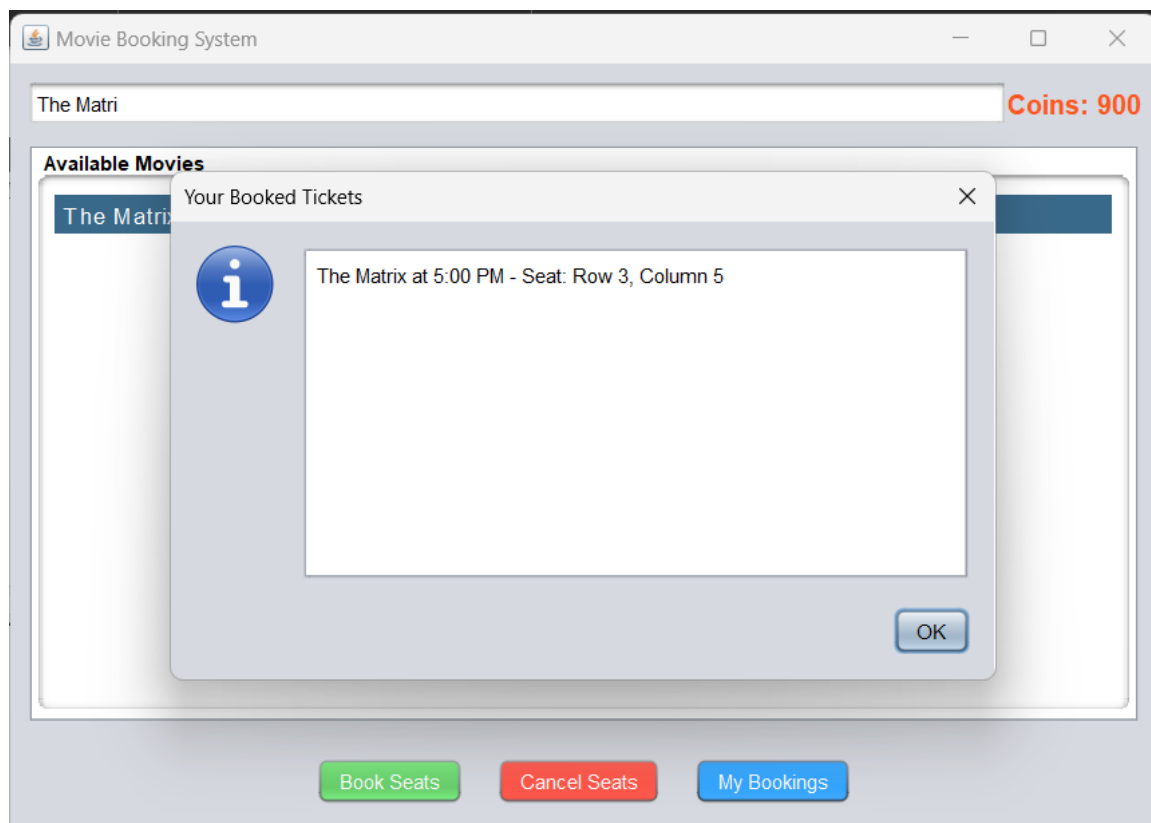


Fig: 2

**Fig: 3****Fig:4**

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Official Documentation

Java Documentation: <https://docs.oracle.com/en/java/>

Swing Documentation: <https://docs.oracle.com/javase/tutorial/uiswing/>

Educational Platforms

Geeks for Geeks: <https://www.geeksforgeeks.org/>

W3Schools: <https://www.w3schools.com/>

Coursera: <https://www.coursera.org/>

Programming Communities

Stack Overflow: <https://stackoverflow.com/>

GitHub: <https://github.com/>

Software Development Blogs

Medium: <https://medium.com/>

Dev.to: <https://dev.to/>

Code Repositories and Examples

GitHub Gist: <https://gist.github.com>