Movie Ticketing System

Software Requirements Specification

Version <1.0>

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Group #10
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Prepared for
CS 250- Introduction to Software Systems
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Revision History

Date	Description	Author	Comments
2/20/25	Version 1		<Requirements Specification>

Document Approval

The following Software Requirements Specification has been accepted and approved by the following:

Signature	Printed Name	Title	Date
	<Your Name>	Software Eng.	
	Dr. Gus Hanna	Instructor, CS 250	

Table of Contents

1. Introduction

The introduction to the Software Requirement Specification (SRS) document should provide an overview of the complete SRS document. While writing this document please remember that this document should contain all of the information needed by a software engineer to adequately design and implement the **Movie Ticketing System** by the requirements listed in this document. (Note: the following subsection annotates are largely taken from the IEEE Guide to SRS).

1.1 Purpose

The purpose of this SRS document is to provide all necessary information needed by a software engineer to adequately design and implement the **Movie Ticketing System**, which is an online system for users to find and purchase movie tickets at theaters throughout San Diego County for upcoming showings. Our specified audience for our application is the residents of San Diego County and this document is intended to be read by software engineers.

1.2 Scope

The scope pertains to the features and implementation of the Movie Ticketing System, which is intended to provide a user-friendly interface for San Diego County residents to easily browse and purchase movie theater tickets with a variety of different seats, showtimes, movies, and prices. Additionally, the interface will allow users to create an account where they can gain loyalty points for each purchase for being a member. Alternatively, they will also have the option to access the interface as a guest, in the case that the customer is not a frequent user of the system. The software will not, however, contain data from movie theatres and the corresponding tickets from movie theatres outside San Diego County.

1.3 Definitions, Acronyms, and Abbreviations

This subsection should provide the definitions of all terms, acronyms, and abbreviations required to properly interpret the SRS. This information may be provided by reference to one or more appendixes in the SRS or by reference to other documents.

Term	*Definition*
SRS	*Software Requirements Specification*
UI/UX	*User Interface/ User Experience*
API	*Application Programming Interface*
DBMS	*Database Management System*
MTBF	*Mean Time Between Failure*

1.4 References

AMC Movie Theatre Website
IEEE Guide to Software Requirements Specification (IEEE 830-1998)

1.5 Overview

The remaining sections of this document provide general descriptions, characteristics, and the functions of the projects/users, the specific requirements, which include functional and non-functional requirements. It will also include analysis models to assist in the complete development and implementation of this product.

2. General Description

The movie ticketing system is designed for cinemas and users to facilitate online booking and payment transactions. Users can browse movies, choose seats, make payments online, as well choose add-ons like refreshments and food items to improve their viewing experience. Our database will contain a variety of different movie theatres throughout San Diego County with a variety of ticketing options and pricing. Additionally, a loyalty program will be offered for those users who choose to create an account.

2.1 Product Perspective

The system connects theaters and customers, enabling real-time ticket reservations. Unlike traditional box office ticketing, it provides seat selection, digital ticketing, refund options, and a customer rewards program. This movie ticketing system is specifically designed and tailored towards San Diego County residents.

2.2 Product Functions

The Movie Ticketing System provides users with a seamless platform to browse movies, select showtimes, purchase tickets, and manage their bookings. The system ensures secure transactions, reliable performance, and an intuitive user experience.

2.3 User Characteristics

General Users: Browse and purchase movie tickets and receive booking details
Registered Users: Earn rewards and save booking details.
Guest Users: Purchase tickets without signing up.
Admin Users: Oversee the system operations and provide customer support

2.4 General Constraints

Seat availability updates must be real-time.
The system must be available 24/7 except during maintenance.
The system must be desktop-friendly
High server uptime is required during peak hours
Secure transactions and GDPR compliance
The system should support multiple theatre chains

2.5 Assumptions and Dependencies

User is assumed to have a modern browser,
User is assumed to have stable wifi connection
User is assumed to be familiar with basic online booking processes and can navigate through the UI without guidance
User must utilize a valid payment method and the system must provide secure payment processes
Theatre must apply accurate showtimes and showdates.

3. Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

This system shall have a responsive web interface supporting desktop and mobile applications
The interface shall allow multiple language options

3.1.2 Hardware Interfaces

The system shall be compatible with a barcode scanner for ticket scanning

3.1.3 Software Interfaces

The system shall integrate with different payment gateways
The system shall connect to the cinema scheduling system

3.1.4 Communications Interfaces

The system shall have email notifications for booking confirmations

3.2 Functional Requirements

3.2.1 <Provide Ticket Details>

3.2.1.1 The system shall display the selected movie, its watchtime, and its location.
3.2.1.2 The system shall allow users to view pricing information for the given ticket
3.2.1.3 The system shall allow users to view up-to-date and available seating and layout information with an inventory check.
3.2.1.3 The system shall allow users to view ticket category (Base or Premium)
3.2.1.4 The system shall allow users to add up to 10 tickets for a given order
3.2.1.4 The system shall return a viewable ticket on the website

3.2.1.5 The system shall allow users to view unique ticket ID
3.2.1.6 The system shall allow users to update their configuration to handle errors

3.2.2 <Provide Search and Filter Bar>

3.2.2.1 The system shall allow users to search for theatre locations and specific movies
3.2.2.2 The system shall allow users to sort and filter search results
3.2.2.3 In this sort and filter panel, the system shall allow users to enter in zip-code for location detection

3.2.3 <Provide Shopping Cart Facility>

3.2.3.1 The system shall allow users to add up to ten tickets to the shopping cart.
3.2.3.2 The system shall display a confirmation message when successfully adding tickets to cart.
3.2.3.3 The system shall allow users to remove selected ticks from the cart.
3.2.3.4 The system shall allow users to “View Cart”, displaying movie name, which theatre, showtime, seat selection, quantity, and price.
3.2.3.5 The system shall continuously display and update the total cost of tickets in the cart.
3.2.3.6 The system shall allow users to “proceed to checkout” on the shopping cart.

3.2.4 <Provide Purchasing Interface>

3.2.4.1 The system shall redirect users to a secure purchasing interface
3.2.4.2 The system shall allow users to enter email address for purchase confirmation and invoice
    3.2.4.2.1 The system shall prefill this information for registered users
    3.2.4.2.2 The system shall not prefill and allow guest to enter preferred email address
3.2.4.3 The system shall contain a 10 minute timer upon redirecting for user to complete payment
3.2.4.4 The system shall allow users to use multiple payment options for purchase (Credit/Debit, Apple Pay, Paypal) through payment gateways and APIs
    3.2.4.4.1 For Credit/Debit purchase, the system shall permit Visa/Mastercard
3.2.4.5 The system shall allow users to input discount for Military, Student, or Senior
3.2.4.6 The System shall email confirmation and customer invoice after purchase processed and authorized (detailed in **3.2.6)**

3.2.5 <Provide and Maintain Customer Profile>

3.2.5.1 The system shall allow users to create an account with the ticketing system
3.2.5.2 The system shall display users account information, purchases made, and point occurred
3.2.5.3 The system shall allow users to change personal information
3.2.5.4 The system shall allow users to save a payment method for future purchases
3.2.5.5 The system shall maintain a user email database to send discount notifications

3.2.5 <Provide Guest Access Alternative>

3.2.5.1 The system shall permit website visitors to purchase tickets with no account
3.2.5.2 The system shall display a second option for guest checkout
3.2.5.3 The system shall allow users to

3.2.6 <Email confirmation and customer invoice>
3.2.6.1 The system shall send an email confirmation to the user's registered email upon payment.
3.2.6.2 The email shall contain every detail about the user's ticket, including location, movie, showtime, seat, price, ED, payment method, quantity, and contact information.
3.2.6.3 The system shall generate a digital invoice for the transaction and attach it to the email.

3.2.7 <Offer rewards and loyalty program for registered customers>
3.2.7.1 The system shall implement a reward system that awards loyalty points for every dollar spent by every customer with an account.
3.2.7.2 The system shall allow users to redeem loyalty points by allowing them to use them at checkout to discount future ticket prices.
3.2.7.3 The system shall set and notify users that their loyalty points expire 12 months after earning them.

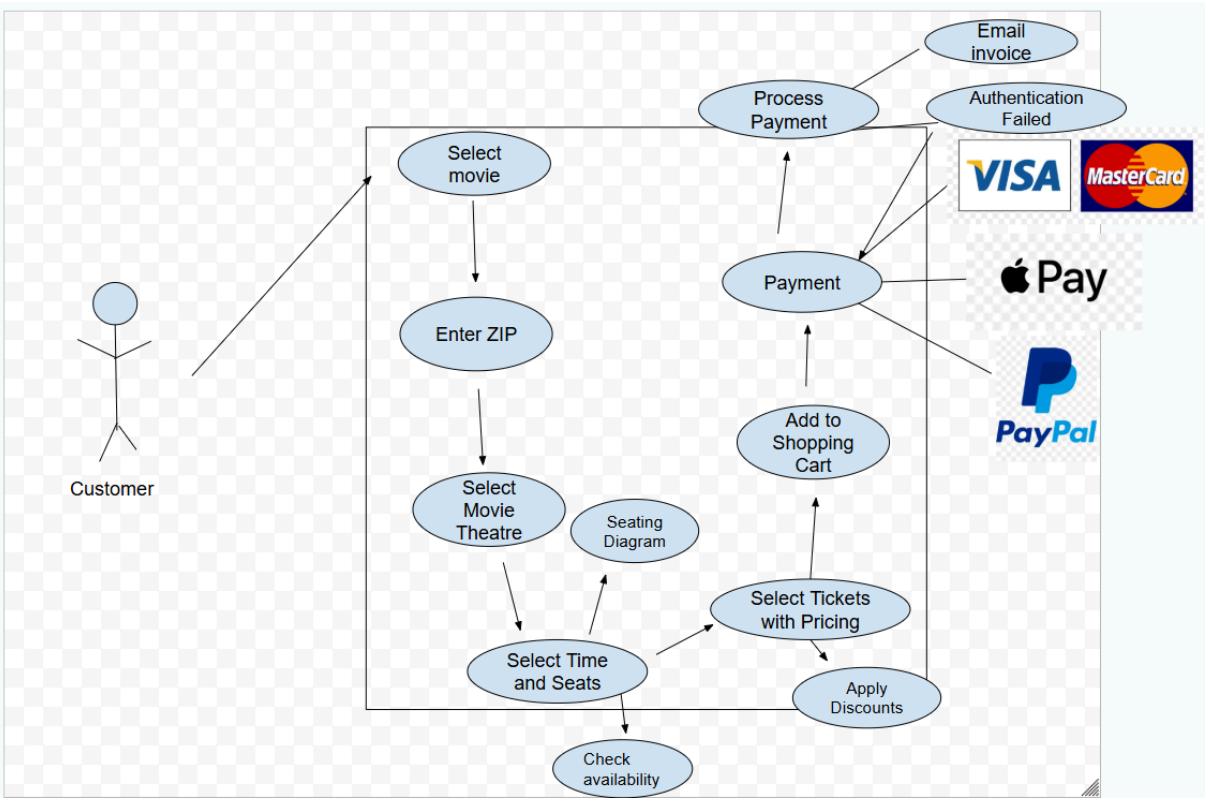
3.2.8 <Offer Refund Policy for Purchases>
3.2.8.1 The system will allow for returns until the day before the movie

3.2.9 <Provide Customer Feedback Option>
3.2.9.1 The system shall allow users to reflect on their web experience after purchasing tickets
3.2.9.2 The system shall display a star ranking meter from 1-5 and an optional textbox for any concerns or comments

3.3 Use Cases

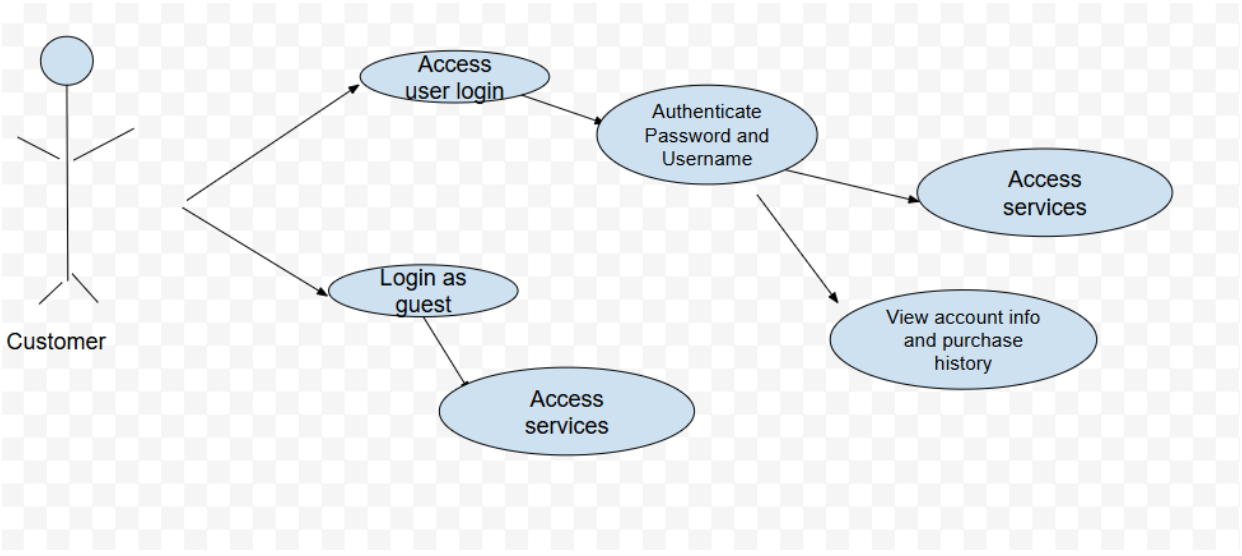
3.3.1 Use Case #1

Purchasing a Ticket
Actors: Customer, Payment gateway



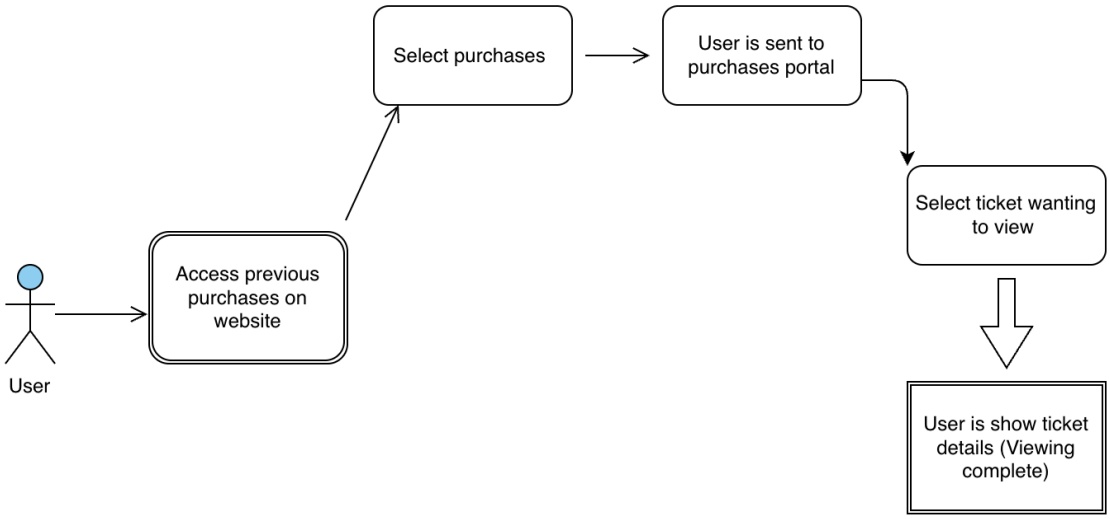
3.3.2 Use Case #2

Logging into System or Accessing As Guest



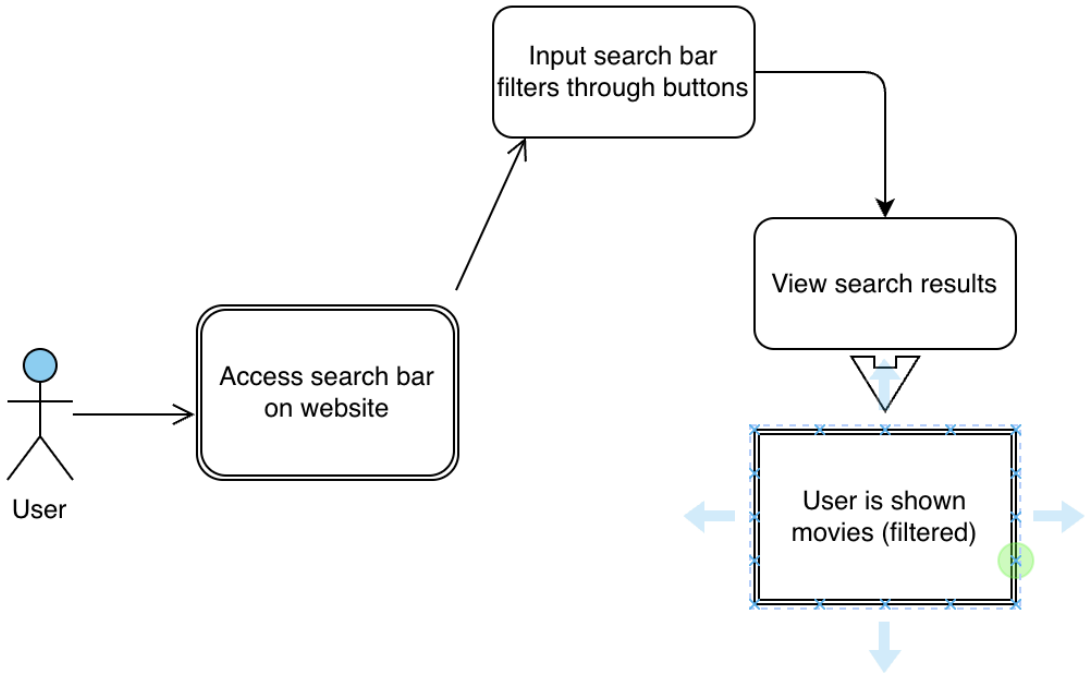
3.3.3 Use Case #3

Previewing ticket
Actors: User



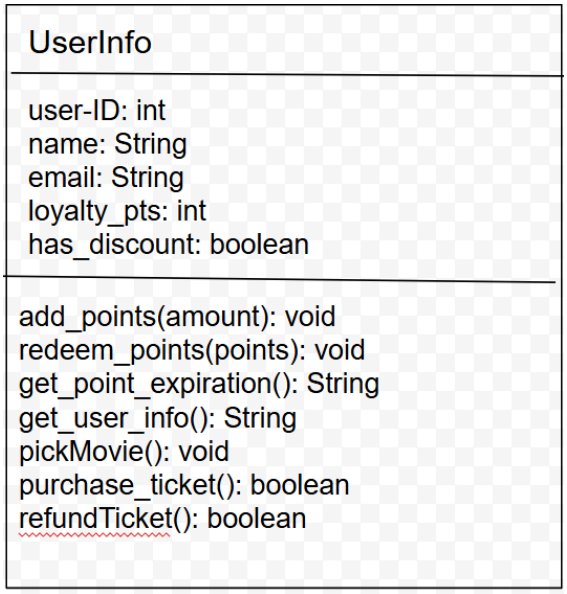
3.3.4 Use Case #4

Searching for Tickets or Theaters
Actors: User

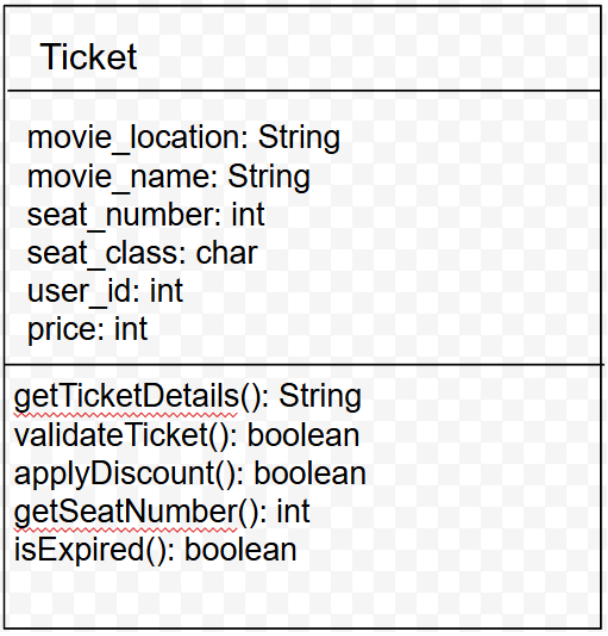


3.4 Classes / Objects

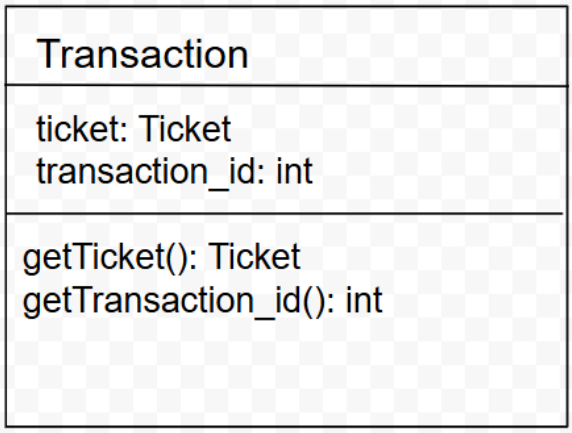
3.4.1 <UserInfo class>



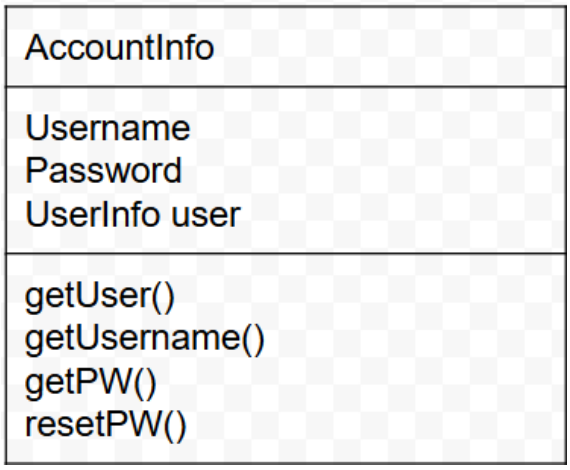
3.4.2 <Ticket Class>



3.4.3 <Transaction Class>



3.4.4 <AccountInfo Class>



3.5 Non-Functional Requirements

3.5.1 Performance

3.5.1.1 The system shall process 95% of transactions in under 2 seconds.
3.5.1.2 The system shall retrieve movie listings and showtimes in under 1 second.
3.5.1.3 The system shall handle 50,000 users at once and still maintain peak performance
3.5.1.4 The system shall redirect users to a secure payment portal in under 2 seconds
3.5.1.5 The system shall load the homepage within 1.5 seconds.
3.5.1.6 The system shall respond to all API calls in under 1 second for critical operations like ticket booking, user authentication, and seat selection

3.5.2 Reliability

3.5.2.1 The system shall have a MTBF of at least 30 days
3.5.2.2 The system shall have a 99% uptime with automated failure mechanisms.
3.5.2.3 Error recovery should take less than 5 minutes for non-critical issues
3.5.2.4 In the case of critical failure, the system shall contain a backup recovery plan that ensures data integrity and recovery within 15 minutes

3.5.3 Availability

3.5.3.1 The system shall be accessible 24/7 with a devoted 2 hours of downtime per month
3.5.3.2 The system's scheduled maintenance time shall be limited to 2AM-4AM and announced 24hrs in advance.

3.5.4 Security

3.5.4.1 User passwords must be hashed and crypted
3.5.4.2 User Payment and Personal Information must be non-visible in payment confirmation and invoice

3.5.5 Maintainability

3.5.5.1 The system shall allow for updates during downtime
3.5.5.2 The system shall be deployed at least once per quarter to ensure security and performance improvements
3.5.5.2 Logs of website errors should be maintained for 6 months

3.5.6 Portability

3.5.6.1 The system shall be compatible with the latest versions of Chrome, Firefox, Microsoft
3.5.6.2 Edge, Safari.
3.5.6.3 The system shall work on devices with screens from 4 inches to 30 inches.
3.5.6.4 The system shall function smoothly on windows and MacOS.

3.6 Inverse Requirements

3.6.1 The system shall not allow users to book tickets after the showtime has started.
3.6.2 The system shall not allow refund requests after the showtime unless the movie was canceled.

3.7 Design Constraints

The system shall comply with the standards for handling credit/debit card transactions securely.

The system shall follow the regulations for protecting users data protection.
The system shall follow OpenID for secure login processes.
Sensitive user data shall be encrypted.

3.8 Logical Database Requirements

The system should use an SQL relational database with tables for **Users** (UserID, Name, Email, Password, Loyalty Points), **Movies** (MovieID, Title, Genre, Rating, Duration, Showtimes), **Theaters** (TheaterID, Location, Seating Layout), **Tickets** (TicketID, UserID, MovieID, TheaterID, SeatNumber, Price, Status), **Transactions** (TransactionID, UserID, TicketID, PaymentStatus, Date)

3.9 Other Requirements

The system shall integrate third-party APIs for payment processing, seat availability, and movie database updates while ensuring automated daily backups.

4. Software Design Specification

4.1 Architectural Diagram

4.2 UML Class Diagram

4.3 Individual Classes of System

found an example here:
https://www2.rivier.edu/faculty/vriabov/cs552_sw_design_specification_example.pdf

5. Analysis Models

List all analysis models used in developing specific requirements previously given in this SRS. Each model should include an introduction and a narrative description. Furthermore, each model should be traceable the SRS's requirements.

5.1 Sequence Diagrams

5.3 Data Flow Diagrams (DFD)

5.2 State-Transition Diagrams (STD)

6. Change Management Process

Identify and describe the process that will be used to update the SRS, as needed, when project scope or requirements change. Who can submit changes and by what means, and how will these changes be approved.

A. Appendices

Appendices may be used to provide additional (and hopefully helpful) information. If present, the SRS should explicitly state whether the information contained within an appendix is to be considered as a part of the SRS's overall set of requirements.

Example Appendices could include (initial) conceptual documents for the software project, marketing materials, minutes of meetings with the customer(s), etc.

A.1 Appendix 1

A.2 Appendix 2