Software Requirements Specification

for

Cinema Management System

Version 1.0 approved

Prepared by Dalia Refaat, 2020030025

Cairo Higher Institute

April 6, 2022

Table of Contents

Revision History

Date	Reason For Changes	Version
14/4/2022	Initial changes	1.0

1. Introduction

1.1 Purpose

The purpose of this document is to provide a debriefed view of requirements and specifications of the project called "Cinema Management System".

The goal of this project is to have a computerized solution for cinemas that will automate the ticket sale, customer booking, and distributor's share processes.

This document covers the whole system, from the backend to user interactions.

The tools used in this project are described in this document as follows:

- Libraries used to control the application's back end.
- Libraries used in the application's UI and UX design.
- Database used for movie information and scheduling.

1.2 Document Conventions

- All terms are italicized.
- Main features or keywords are highlighted in bold.
- The formatting of this document follows the IEEE standard for System Requirements Specifications.

1.3 Intended Audience and Reading Suggestions

- Anyone who is familiar with programming will be able to read this paper. The intended audience consists of developers, software architects, testers, project managers, and documentation writers. Anyone with a programming background and a basic understanding of UML, on the other hand, will be able to completely understand this work.

- It is structured into five phases, with parts 3, 4, and 5 aimed towards developers and software managers, whereas the other sections may be used by anybody interested in learning more about the software.

This Software Requirement Specification also includes:

- Overall description of the product
- External interface requirements
- System Features
- Other non-functional requirements

1.4 Product Scope

With the increase in technology there has been lots of advancement in cinemas system. Our cinema system has given easy accessibly of all the resources available. Enables you to deliver

great service, from ticketing and concessions to movies management and more Implemented alone. This helps you drive growth, build customer loyalty, and improve your operations.

Staff can easily reach their users by interactive GUI with development helps in managing the database for storing and retrieving required information about schedules, collections, and ticket sales.

Advantages of project:

- It provides the necessary information about upcoming movies, ticket sales, and other data in less time.
- It is incredibly simple to gain access to and manage information regarding movie schedules, movie collections, and ticket sales.
- Helps to reduce effort and saves time while monitoring setups.
- Flexible as it can be simply modified when software changes are required.

1.5 References

- IEEE. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications. IEEE Computer Society, 1998.

2. Overall Description

2.1 Product Perspective

This system consists of four components packaged as one desktop application:

- **Booking Movies and Tickets:** This allows customers to view movie times, purchase tickets, and order concessions.
- **Screen Controller:** Controlling and monitoring your screens by linking them to our intelligent system.
- **Automated List Creator and Scheduler**: Automated movie scheduling with marketing decisions based on data rather than intuition, as compared to manually manning ticket sales.
- **Database Management System:** Storing, retrieve, and run queries on data.

2.2 Product Functions

The system will help the user in searching for available seats and tickets for the movie, finding all details about the movie, and keeping records of all movies, maintaining, or updating records, accurate calculation of tickets sold, and administrative tasks.

User can perform following actions:

- Data Inputs
- Customers / Distributors Data

- Daily / Weekly Movies Schedule
- Movie Details
- Booking Movies
- Ticket Distribution
- Booking Cancellation
- Previews of Reports
- Reports on Sales
- Summary of Sales
- Daily, weekly, monthly, quarterly, and annually report
- Monthly Sales Comparisons
- Control Content of Cinemas

2.3 User Classes and Characteristics

This application is designed to be simple to use, so almost any user will be able to get started quickly including:

- User who likes to know more about a movie, book it, or even cancel it.
- Staff in charge of the entire portal.
- Unit and integration testers who will write unit and integration tests to validate the system.
- Programmers who are interested in bug fixes and system development.

2.4 Operating Environment

System Requirements

- Any of the operating systems listed below.
- Internet connection is required for the software.

Platforms Include

GNU/Linux

- CPU: 1.8 GHz or faster processor. Quad-core or better recommended.
- Memory: 2 GB of RAM; 8 GB of RAM recommended (2.5 GB minimum if running on a virtual machine)
- Hard disk space: Minimum of 800MB up to 10 GB of available space.

Windows

- CPU: 1.8 GHz or faster processor. Quad-core or better recommended.
- Memory: 2 GB of RAM; 8 GB of RAM recommended (2.5 GB minimum if running on a virtual machine)
- Hard disk space: Minimum of 800MB up to 10 GB of available space.

2.5 Design and Implementation Constraints

Users are only allowed to leave a review if they have seen the movie. This design decision based on logic since we didn't want members to be able to spam fake reviews. This decision was

executed by restricting users' ability to post reviews to their reservation history tab, which only displays movies watched previous to the current date.

2.6 User Documentation

- There is a user manual that describes all of the features and methods for accessing them.
- The user interface will have a "Help" button that will lead users to our email.

2.7 Assumptions and Dependencies

We assume that the user has a general understanding of computers and that the instructions given in English are clear to the user.

For the most of our project work, we relied on open-source content found online. To make the system operate as a whole, we combined diverse components from other projects.

3. External Interface Requirements

3.1 User Interfaces

Java is used to implement the interface. It is divided into two sections: that of the staff and that of the user. The staff interface, which is distinct from the user interface, is mostly used for application and database management.

3.2 Hardware Interfaces

- Input device is needed for user to interact with the system.
- Software needs a display device to interact with user.
- Network Interface Card (NIC) for internet connectivity.

3.3 Software Interfaces

- Software has been linked to a database in order to view and pick the relevant movie details, tickets for available seats, and manage records.
- Software units communicate by using predefined parameters and a shared memory space.
- Software units communicate by calling pre-defined procedures.

3.4 Communications Interfaces

- Internet connection is used to communicate with database.
- Communication via the internet will be encrypted.
- HTTPS/TLS will be used for all network communications.

4. System Features

Following are the use case diagrams for the application

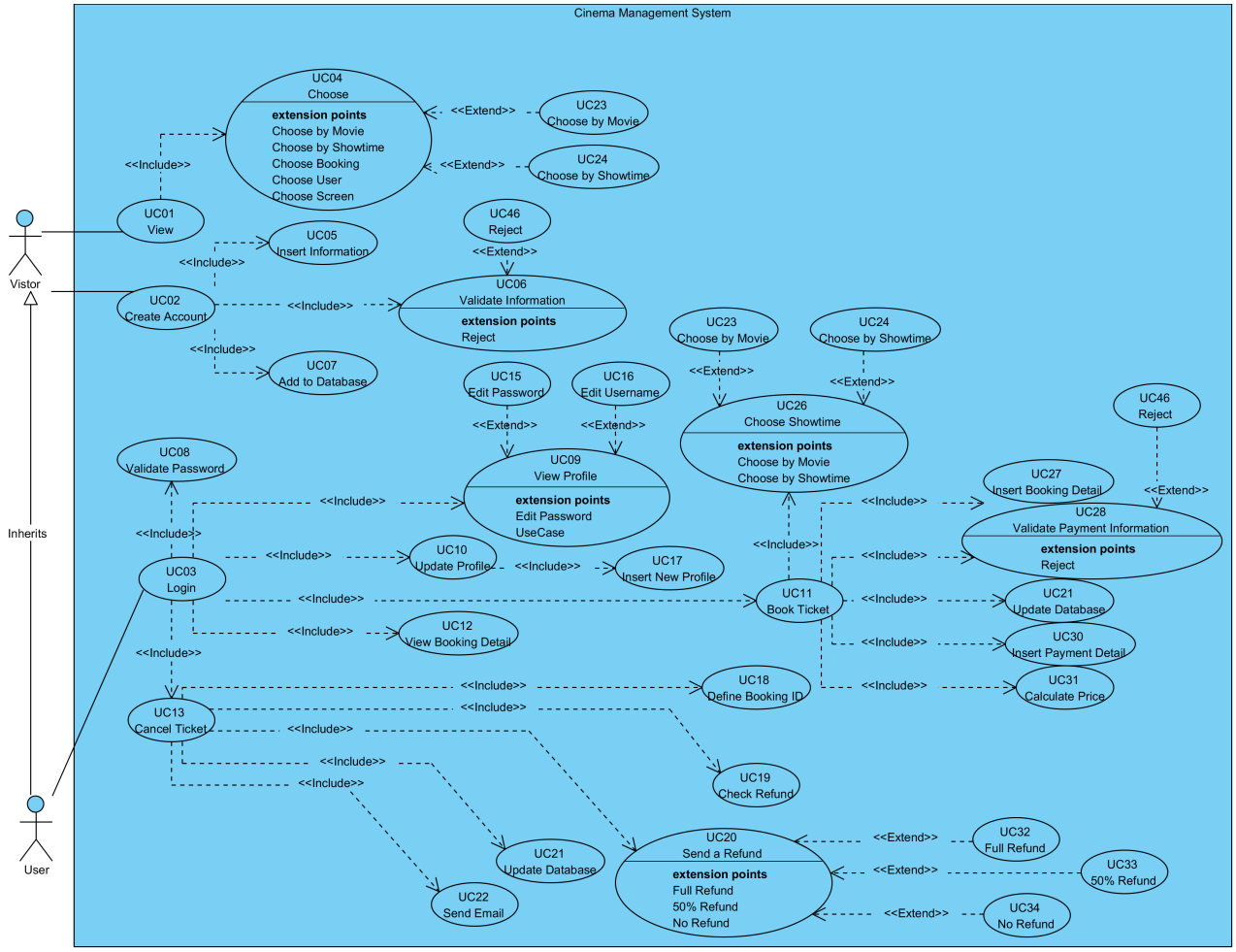

Fig.1. Use Case diagram for visitor and user of the system

Use case description table

Use Case Title (ID)	Description	Remarks
View (UC1)	The visitor can view a list	
Create Account (UC2)	The user can create an account	
Login (UC3)	The user can login to an account	
Choose (UC4)	The visitor can choose from multiple options	
Insert Information (UC5)	The visitor can insert information to create account	

Validate Information (UC6)	The visitor validates information to create an account	
Add to Database (UC7)	The system adds the account to database	
Validate Password (UC8)	The user validates password before login	
View Profile (UC9)	The user can view his profile	
Update Profile (UC10)	The user can update his profile	
Book Ticket (UC11)	The user can book a ticket	
View Booking Detail (UC12)	The user can view his booking detail	
Cancel Ticket (UC13)	The user can cancel his ticket	
Reject (UC14)	The visitor can get rejected creating account	
Edit Password (UC15)	The user can edit his password	
Edit Username (UC16)	The user can edit his username	
Insert New Profile (UC17)	The user can insert a new profile	
Define Booking ID (UC18)	The user defines his booking ID while cancelling ticket	
Check Refund (UC19)	The user can check his refund after cancelling ticket	
Send a Refund (UC20)	The user gets his refund	
Update Database (UC21)	The user after cancelling ticket, database gets update	
Send Email (UC22)	The user receives email of ticket cancellation	
Choose by Movie (UC23)	The visitor can choose ticket by movie	
Choose by Showtime (UC24)	The visitor can choose ticket by showtime	
Insert Booking Detail (UC27)	The user inserts booking detail while booking ticket	
Validate Payment (UC28)	The user validates payment information while booking ticket	
Insert Payment Detail (UC30)	The user inserts payment detail while booking ticket	
Calculate Price (UC31)	The user gets calculated price after booking ticket	
Full Refund (UC32)	The user receives full refund	
50% Refund (UC33)	The user receives half refund	
No Refund (UC34)	The user receives no refund	

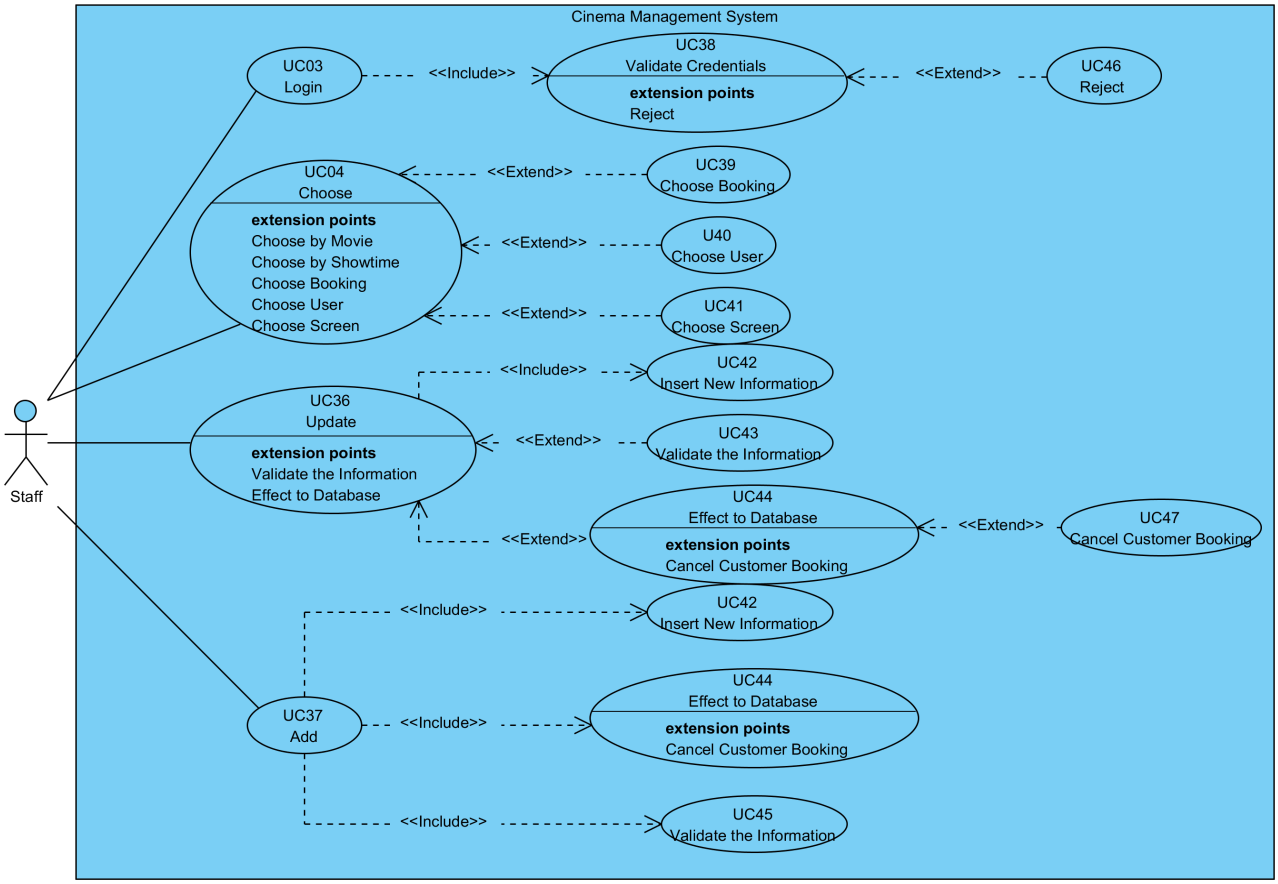

Fig.2. Use Case diagram for staff of the system

Use case description table

Use Case Title (ID)	Description	Remarks
Update (UC36)	The staff can update	
Add (UC37)	The staff can add	
Validate Credentials (UC38)	The staff can validate credentials after login	
Choose Booking (UC39)	The staff can choose by booking	
Choose User (UC40)	The staff can choose by user	
Choose Screen (UC41)	The staff can choose by screen	
Effect to Database (UC44)	The staff update effects on the database	
Reject (UC46)	The staff can be rejected after validating the credentials	
Cancel Booking (UC47)	The staff can cancel customer booking	

Functional Requirements

Identifier for Requirement	Functional Requirement Name	Description
RQ 01	User registration and login	The user must first register before using the system, and then login by inputting a valid user ID and password.
RQ 02	Search for movie show	The user will be able to see a list of movies that are running and where they are being played.
RQ 03	Get the latest update	The user will be able to receive notifications on certain movies.
RQ 04	Booking the tickets	The user will be able to purchase one or more tickets, and a 2D picture of the seats will be displayed, from which the desired seats will be picked.
RQ 05	Ticket cancellation	The user shall be given an option to cancel ticket one hour before the movie show starts.
RQ 06	Handling administrative tasks	The user after authentication will be able to execute administrative operations on system.
RQ 07	Add and delete of movie information	The staff will have the ability to add movies and other related information.
RQ 08	Stop ongoing movie shows	The staff will have the ability to stop ongoing running movies in the cinema.
RQ 09	Edit movies schedule	The staff will be allowed to make changes to the list.
RQ 10	View and analyze the activity of users	The staff will be able to do statistical analysis on the data of users.
RQ 11	Ensuring revenue and queries	The staff will be able to report the monthly revenues from ticket sales, the monthly wages, the monthly costs from acquiring new movies, the monthly earnings, and the total number of tickets sold each movie.
RQ 13	Fetch data and control all activities	The staff would have the option of obtaining all data and controlling all activities.

This system comes with the following set of features

Booking Movies and Tickets

- The system has a complete set of features that allow for the promotion of online ticket sales.
- The system also provides additional income potential by adjusting ticket pricing based on real-time demand variables.

Screen Controller

- The system is in charge of displaying the content on the screen, and it manages everything from dimming the lights and turning on the projector to creating the lists that make each showing.
- Staff may monitor all of their screens in order to actively handle any difficulties or make last-minute changes to screen allocations and schedules, as well as respond to any unexpected situations.

Automated List Creator and Scheduler

- System creates a list based on its users' preferences based on their booking history in order to increase the number of movies shows that users regularly book, which are then added to a weekly schedule.
- System also manages which trailers and ads appear in the pre-show for each user by targeting them in their account with criteria such as age rating, screen number, or time of day.

Database Management System

- It is constructed from a SQL database.
- This contains all of the relevant information on the system's users. All of the information about the users is arranged. The purchases may be viewed and validated by the staff.
- The system may be modified by the staff by adding movies, time, day, and banners, among other things. The available seats are stored, allowing it to be stated when a seat is booked.

5. Other Nonfunctional Requirements

The non-functional requirements of the system are explained below.

Non-Functional Requirements	Name	Description
5.1 Performance Requirements		
NR_01	Quickness	The system should be quick enough to connect and respond to any user activity in any way without shattering or buffering, or else the experience would be poor
NR_02	Robustness	The system should be strong enough to deal with and respond to common error scenarios, such as a lost internet connection
NR_03	Failure Handling	In the case of a failure, it should be able to fail or recover quickly
5.2 Safety Requirements		
NR_04	Exception Handling	The system should be able to limit or notify the user when they do anything wrong, such as attempting to exit without storing the unsaved data
5.3 Security Requirements		
NR_05	Encrypted Connection	The user's connection to the servers should be encrypted (HTTPS/TLS)
5.4 Software Quality Attributes		
NR_06	Error Handling	The system should not cause or trigger any events that will make the operating system unrecoverable
5.5 Business Rules		
NR_07	Guidelines	Unless required by applicable law or agreed to in writing, software distributed is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied

6. Other Requirements

As there are presently no further requirements, this may be defined later.

Appendix A: Glossary

Word	Definition
User	Any living being who is interacting with the software is a *user*.
System	The package of all the components which takes input and gives output to demonstrate the features of the software is called *System*.
Database	Collection of information on different topics related to each other.
NIC	A network interface card (NIC) is a computer circuit board or card that is installed in a computer so that it can be connected to a network.

Appendix B: Analysis Models

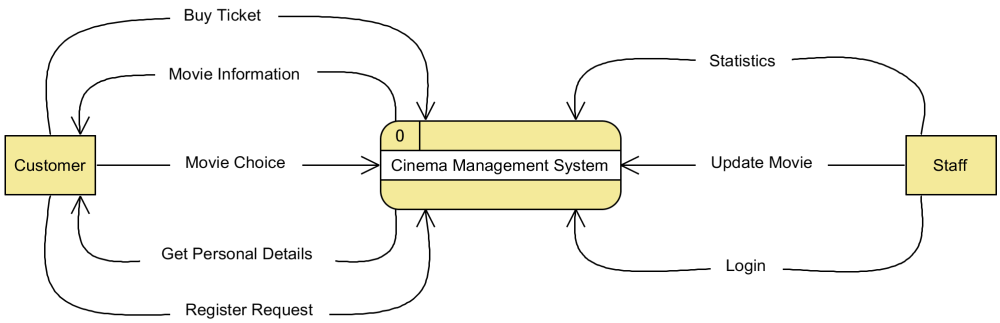

Fig.3. Context-level Data Flow Diagram (DFD) of the system

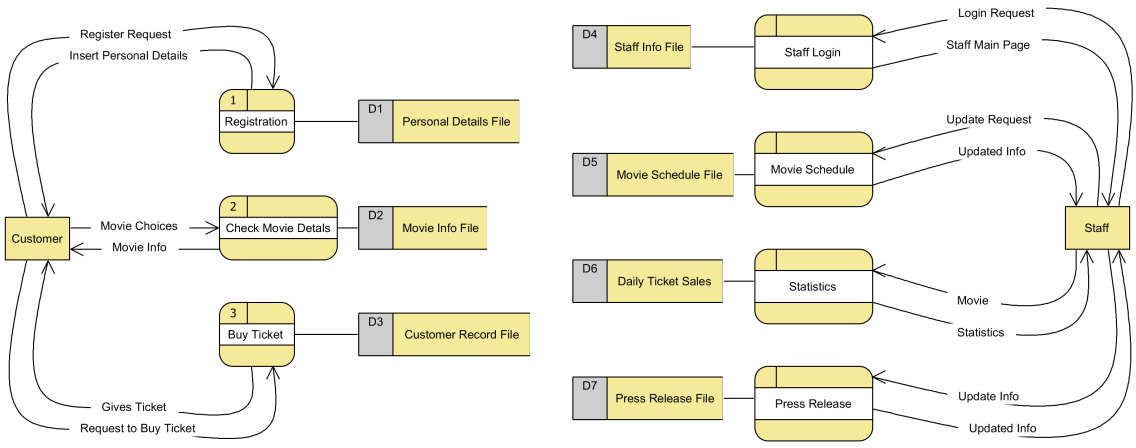

Fig.4. Level-1 Data Flow Diagram (DFD) of the system

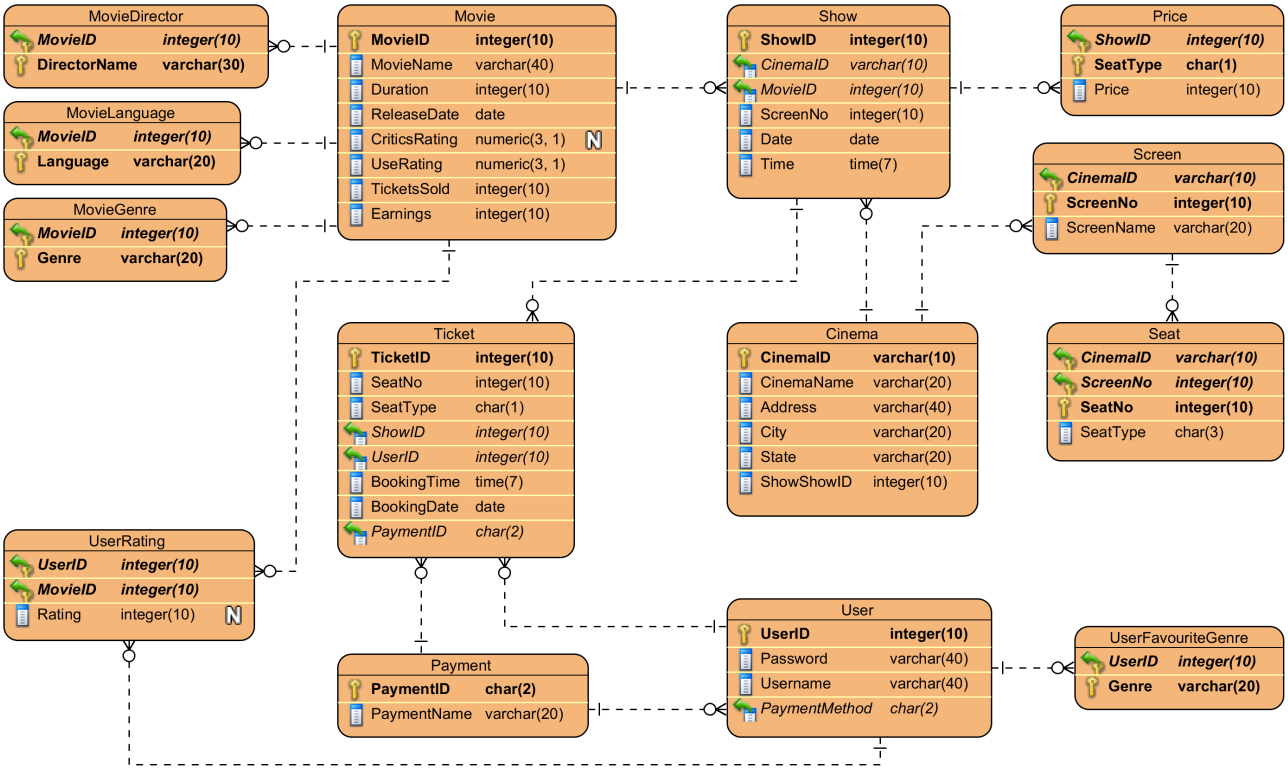

Fig.5. Entity Relationship Diagram (ERD) of the system