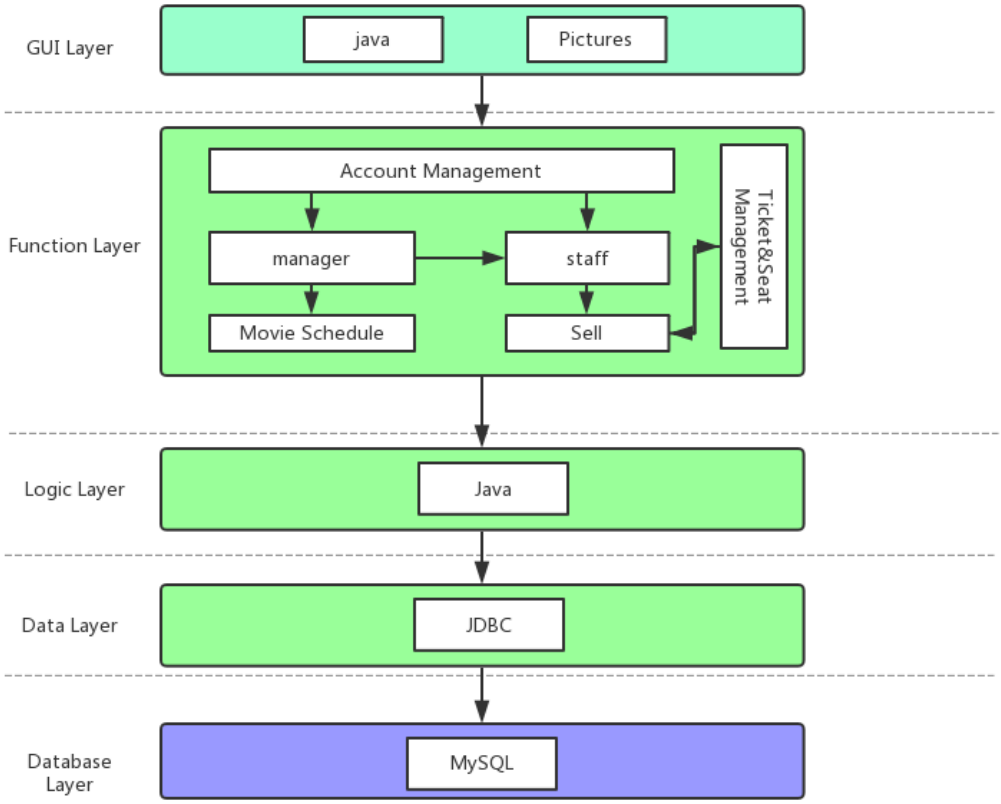
Design Document
Group 10

1. Introduction

The purpose of this design is to show the architecture and the entity relations of the Ticket Management System for Cinema. This document includes the architecture and the entity relations showing the relationship between all the parts of the system, and it also shows the relationships in the databases. The audience could understand the basic structure of this system.

2. Architecture

2.1 Introduction



2.2 Modules

2.2.1 Database layer

This layer is for storing the data of this system, and it also defines the relationship between this data. In this system, we use MySQL which is one of the most popular and useful database server software. The specific descriptions of the data relationships are in the Data Access Layer below.

2.2.2 Data Access Layer

This layer is a connection between the database and the programming language. JDBC, also as known as Java Database Connectivity, if an application programming interface (API) for the programming language Java, which defines how a client may access a database. It is Java based data access technology and used for Java

database connectivity. JDBC allows multiple implementations to exist and be used by the same application.

2.2.3 Logic Layer

This module is responsible for providing all necessary business logic to the Java objects in the system. This module will supply the desired information to the Data layer including movie's names, times, prices, places and user's names and positions.

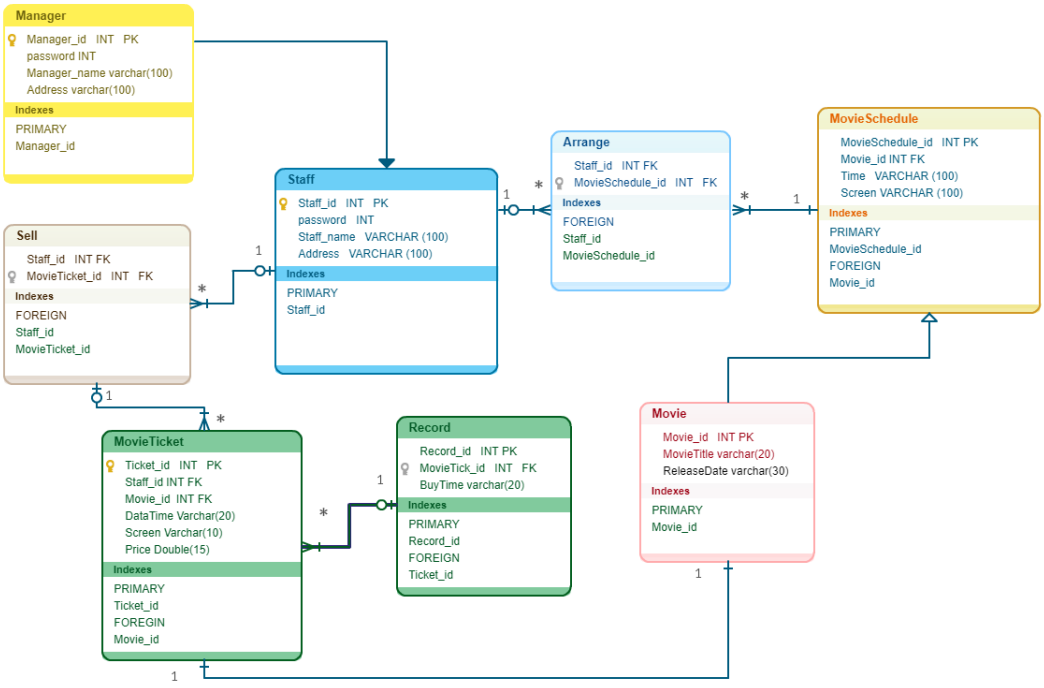
2.2.4 GUI Layer

This is the highest layer of the whole system which provide the user interface. Users interact with system by this layer. In this layer, users of ticket sellers will be able to login to the system to sell the tickets. Managers will be able to login to the system to see the selling situation and schedule movies in next week. A combination of Java and pictures. Users will also be able to interact with the GUI layer to sell the tickets and choose seats etc. which will be sent back down the layers and stored in the database to be accessed by other users.

3. Class Diagram

3.1 Data table classes

3.1.1 Schema



3.1.2 Schema information

The database would be organized by these tables. It contains the classes and the relationships between classes.

Staff: This table is designed for every staff in this cinema. It holds the information about them including staff ID (username), name, password, and address. Staff ID is the primary key.

Manager: The manager has a higher priority than a normal employee. This table will hold the information of manager just like the staff table. It inherits the attributes and operations of staff. Manager ID is the primary key.

Movie Schedule: It would hold all the information about the movie schedule for each day. The information includes the movie schedule ID, movie ID, time, and screen (every screen has one movie schedule for a single day). One movie scheduled can have many movies. The table has the movie schedule ID as the primary key, and one foreign key: movie ID.

Arrange: This table represents the relationship between the movie schedule and the staff. Basically, it is a part of working record of all the staffs. It has staff ID and movie schedule ID.

Movie Ticket: This table holds the information for every sold movie ticket. Including the ticket ID, staff ID, movie ID, sell time, screen, and price. Each movie ticket can only have one movie. Movie ticket ID is the primary key, and the movie ID is the foreign key.

Sell: It represents the relationship between the staff and the movie ticket. It is another part of working record. The sell table holds staff ID and movie ticket ID. Since one staff can sell many movie tickets, one staff table can be related to multiple sell tables.

Record: For every customer, there would be one record for one payment. Thus, this table holds the record ID, movie ticket ID, and purchase time. One record can have at least one or more movie ticket. Record ID is the primary key, and the movie ticket ID is the foreign key.

Movie: This table holds the information about all the released movies. It has movie ID, movie title, and release date. Movie ID is the primary key.

3.2 Class Information

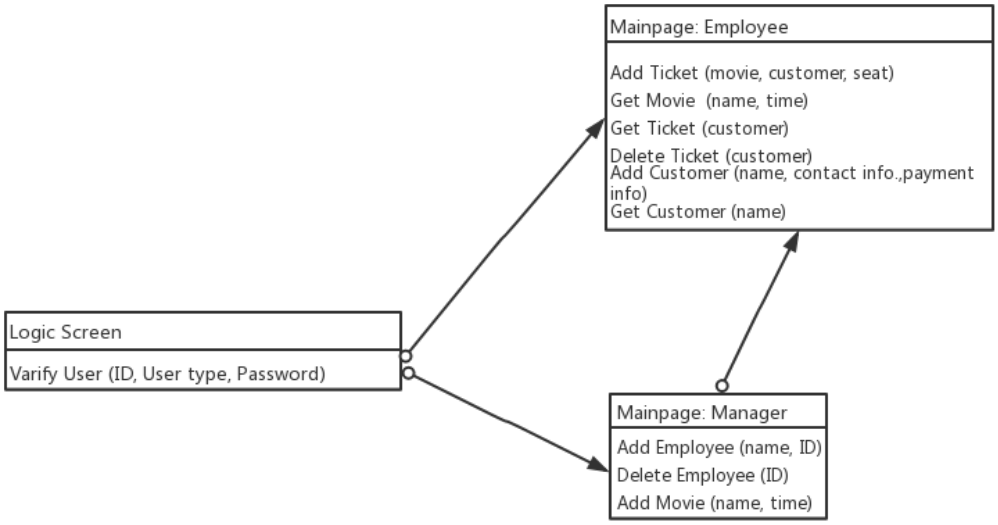
All classes will be implemented in JDBC in the data access layer as what the schema shows above. Higher layers are built based on the lower layer so that the classes can be used throughout the whole system. For example, the Arrange class contains both staff ID and movie schedule information. The logic layer can directly take the class to get all information and pass them to higher layers like GUI layer for GUI showing the information on the screen.

3.3 GUI Interface

As the top layer of this system, the GUI layer contains three different pages, a logic screen, and two main homepages for two different types of users. When a user wants to enter the system, a user ID and a corresponding password are required by a login page. The entered user information will be verified with the database. When it matches, a specific homepage will be loaded atomically, depending on the type of user is manager or employee. Otherwise, an error message will pop and ask the user to re-enter the information. The system will check the type of the login account and log a corresponding account.

The main function a manager homepage is managing all employees, so the homepage stores the database of all employee users. On the initial page, there is a list of all employee accounts. Each element in the list contains the account ID and the name of the employee. The manager can click on a specific employee's account to delete them. At the bottom of the list, there is an add icon, so the manager can build new accounts for newly hired employees. Next to the add user bottom, there are two additional bottoms. One of them is a new movie bottom for adding new movies, when click on it the system will ask for the movie name and showing time for adding new movies in the schedule. The other one is a link leading to an employee's page, since the manager's account also contains the functions of an employee's account.

The employee's page contains the data of all movies, all tickets, and all the customers. The main part of employee's page is a time table. The timetable shows all movies in a schedule. Each movie is shown as a tab and set in different time slots. The tab shows the movie name and the number of seats left. The tabcan be clicked to show a list of all seat that is still available. An employee can choose the seat and enter the customer information to create new tickets. All information can be checked in the same way.


Mainpage: Employee
Add Ticket (movie, customer, seat)
Get Movie (name, time)
Get Ticket (customer)
Delete Ticket (customer)
Add Customer (name, contact info.,payment info)
Get Customer (name)
Logic Screen
Varify User (ID, User type, Password)
Mainpage: Manager
Add Employee (name, ID)
Delete Employee (ID)
Add Movie (name, time)