



Movie Ticket Booking Management System (MTBMS)

**(CSE 1709) Advanced
Programming**

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Introduction and Purpose:

In the contemporary digital era, the necessity for efficient, user-friendly, and robust systems for everyday activities has become paramount. The Movie Ticket Booking Management System (MTBMS) stands as a quintessential example of such a necessity, addressing the growing demand for streamlined management processes within the entertainment industry. This advanced programming project seeks to design, develop, and implement a comprehensive solution using JavaFX, a powerful framework for building rich client applications. The aim is to facilitate the management of movie ticket bookings by theater staff and administrators, ensuring a smooth and efficient operation from scheduling to ticket issuance.

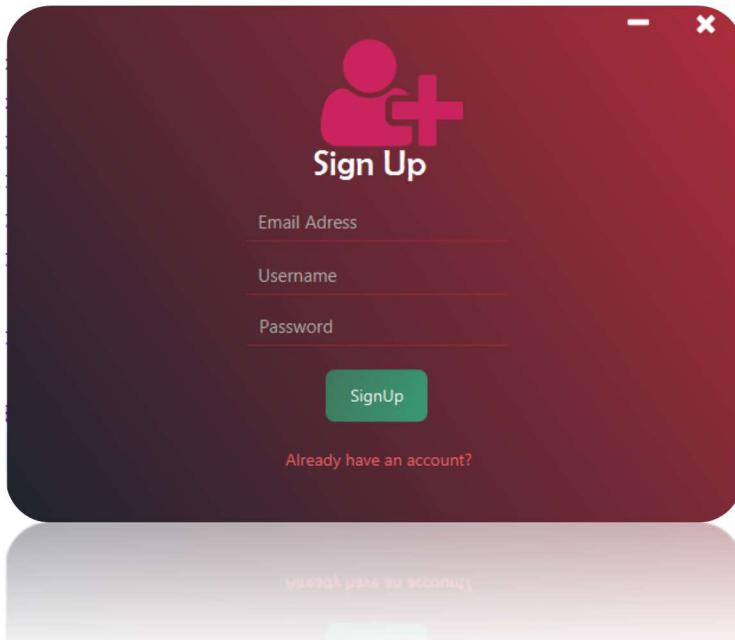
The primary objective of the MTBMS is to revolutionize the traditional management of movie ticket bookings by integrating cutting-edge technologies and user-centric design principles. This system focuses on the needs of theater managers and staff, providing tools to handle reservations, cancellations, and customer management efficiently. While end-users (moviegoers) will still receive their tickets, the system's main goal is to streamline backend operations, ensuring a seamless process from booking to ticket issuance.

The implementation of the MTBMS holds significant potential to transform the management of movie ticket bookings by simplifying administrative tasks, enhancing operational efficiency, and ensuring accurate and timely ticket issuance. This project not only addresses the immediate needs of theater managers and staff but also sets a benchmark for future advancements in digital management systems within the entertainment industry.

The development of the MTBMS will leverage JavaFX for the front-end, providing a rich user interface experience tailored to the needs of theater managers and staff. JavaFX is well-suited for building desktop applications with advanced graphics, media, and web content capabilities. The back end will be powered by Java, ensuring scalability, security, and performance. A relational database management system (MySQL) will handle data storage and retrieval. Furthermore, the integration of APIs for third-party services, such as payment gateways, will be integral to the system's functionality.

Features and Functionality

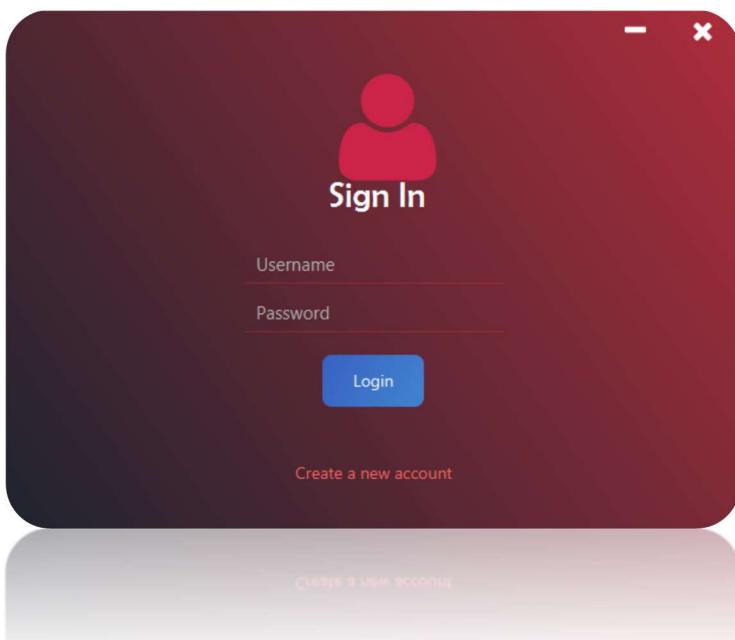
1- Signup screen:



For a new administrator, he/she should have their own username and password. If the account already exists, they can click on the hyperlink ("Already have an account") to switch the form from the signup to the sign in screen. Otherwise, the user needs to create a new account to access the application.

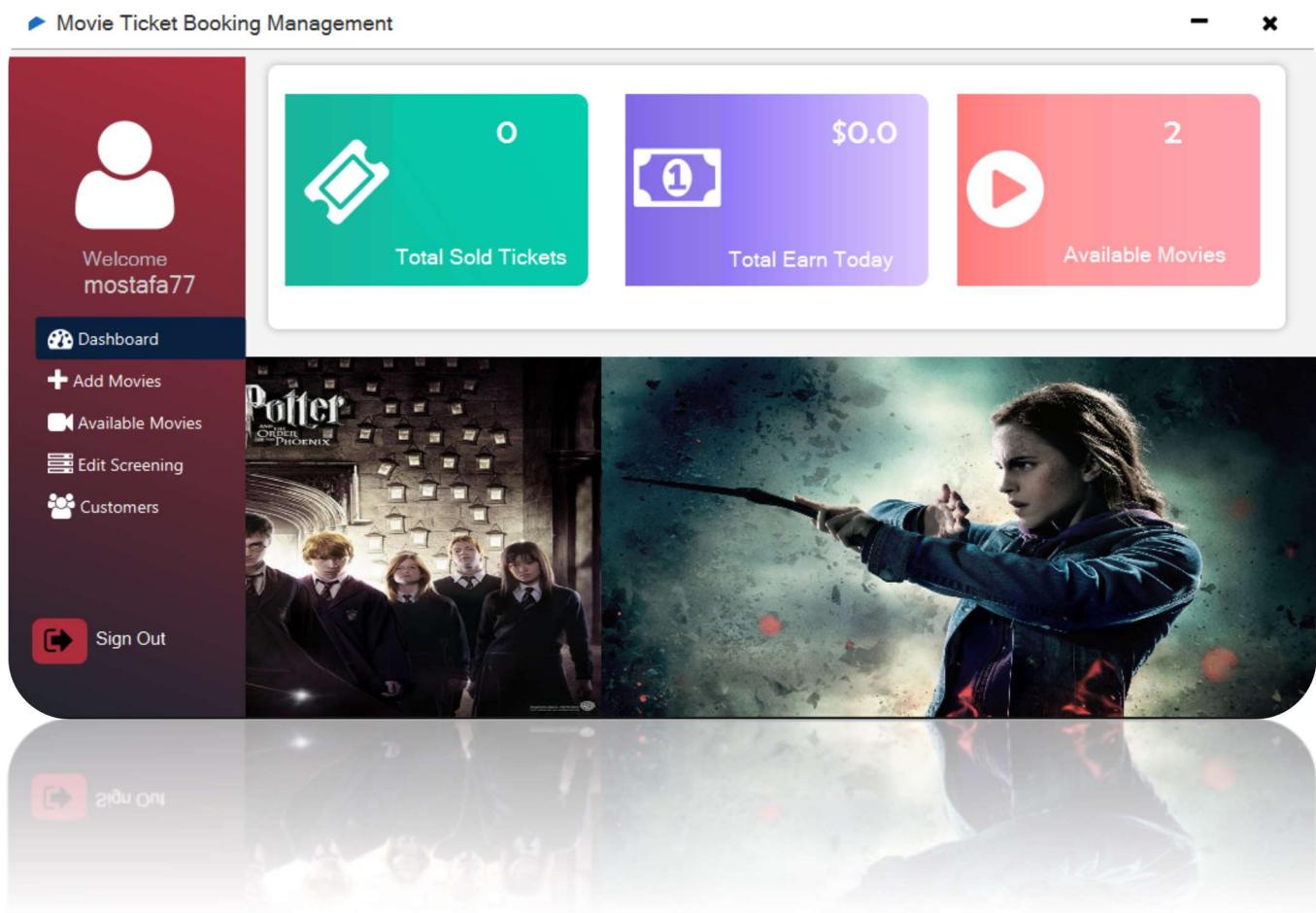
Every attribute has its own properties. For email, it should contain lowercase letters, numbers, and the special symbol “@”. Secondly, the username should be unique. If it already exists, the program will display a message indicating that this username already exists and should be changed.

2- Sign in screen:



This is the last phase before proceeding to the main program. If the user already has an account, they enter their username and password, then hit the login button to proceed to the program. If the username or password is incorrect, a message will be shown indicating that the username/password is incorrect. Otherwise, the user proceeds to the program.

3- Main program (Dashboard):



Proceeding into our program, firstly, the username is displayed at the top left of the screen. Secondly, there are five buttons for five different tasks, each button switching the user's screen to a different view. Finally, there is a sign-out button that logs the user out of the program and returns them to the sign-in screen, allowing the same user or a different user to enter the program again.

For our first button or view, which is the dashboard, it displays three main pieces of information at the top: the total number of tickets sold that day, the total income for the same day, and the number of available movies for customers to book tickets for. Additionally, there is an image slider that showcases posters of the main movies being shown.

4- Add Movies Screen

The screenshot shows the 'Movie Ticket Booking Management' application. On the left, a sidebar displays a user icon, the name 'mostafa77', and navigation options: Dashboard, Add Movies (highlighted in blue), Available Movies, Edit Screening, Customers, and Sign Out. The main area features a movie card for 'SPIDER-MAN No Way Home' with an 'import' button. Below it, form fields allow editing of Movie Title (SpiderMan-NoWayHome), Genre (Fantasy/Action), Duration (2:38:00), and Published Date (5/1/2021). Action buttons include Insert, Update, Delete, and Clear. To the right is a table listing movies with columns: Movie Title, Genre, Duration, and Published Date. The table shows two entries: 'SpiderMan-NoWa...' (Fantasy/Action, 2:38:00, 2021-05-01) and 'Harry Potter and t...' (Fantasy/Adventure, 2:21:00, 2011-05-08).

| Movie Title | Genre | Duration | Published Date |
|-----------------------|-------------------|----------|----------------|
| SpiderMan-NoWa... | Fantasy/Action | 2:38:00 | 2021-05-01 |
| Harry Potter and t... | Fantasy/Adventure | 2:21:00 | 2011-05-08 |

As shown in the figure, this view is responsible for managing all movie data in the cinema. Firstly, we have our main table, which displays a list of all the movies currently in the cinema. For these movies, we have several options. We can select a movie from the table to display its data in the textboxes on the left side of the screen. From there, we can either delete the movie using the delete button or update any information about the movie, such as its duration or title. The clear button is responsible for clearing our selection only.

To insert a new movie, we can enter its data and then click the insert button. The movie will be added successfully if the title is unique. If the title already exists, a message will be shown indicating that the title already exists; otherwise, the movie will be added successfully.

Lastly, the main table in this view has its own search bar. This allows an admin to quickly find the desired movie by searching using any attribute of the movie, which is especially useful if there are hundreds of movies listed.

5- Available Movies & Purchase

| Movie Title | Genre | Showing Date |
|----------------------------------|-------------------|--------------|
| SpiderMan-NoWayHome | Fantasy/Action | 2021-05-01 |
| Harry Potter and the Deathly ... | Fantasy/Adventure | 2011-05-08 |

This view is the most important, as it allows the admin to purchase a ticket for a customer for a desired movie. Each movie has an attribute indicating whether it is current (still showing) or has ended. All showing movies, or available movies, will be displayed in the table. The admin can select a movie to display its attributes in the text boxes on the top left of the screen for verification.

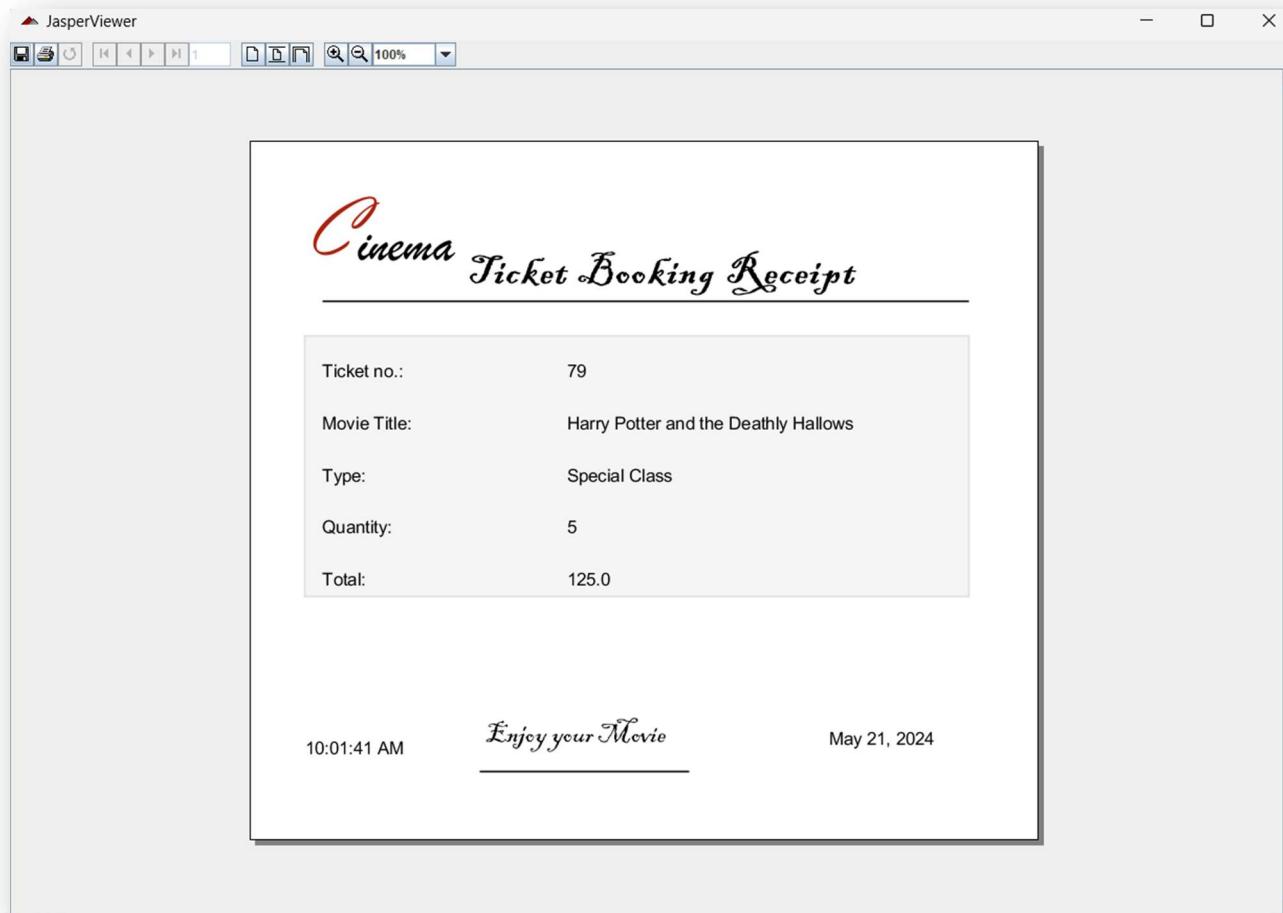
| Movie Title | Genre | Showing Date |
|----------------------------------|-------------------|--------------|
| SpiderMan-NoWayHome | Fantasy/Action | 2021-05-01 |
| Harry Potter and the Deathly ... | Fantasy/Adventure | 2011-05-08 |

After selecting a movie, the admin can press the "Select Movie" button to display the title and show the movie picture below for additional confirmation. Once confirmed, the admin can proceed to buy the tickets. The admin needs to ensure the quantity of tickets the customer needs and specify whether they are of normal class or special class, which can be selected using spinners.

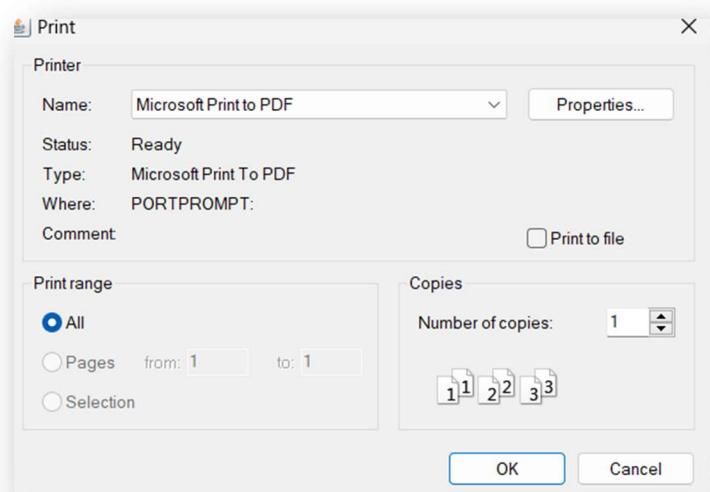
| Movie Title | Genre | Showing Date |
|----------------------------------|-------------------|--------------|
| SpiderMan-NoWayHome | Fantasy/Action | 2021-05-01 |
| Harry Potter and the Deathly ... | Fantasy/Adventure | 2011-05-08 |

Once the admin has ensured the details, they can press the "Buy" button. A confirmation message will be shown if the purchase is successful; otherwise, an error message will appear if the admin forgot to select the movie or specify the quantity of tickets. After the purchase is confirmed, a receipt can be generated by pressing the "Receipt" button.

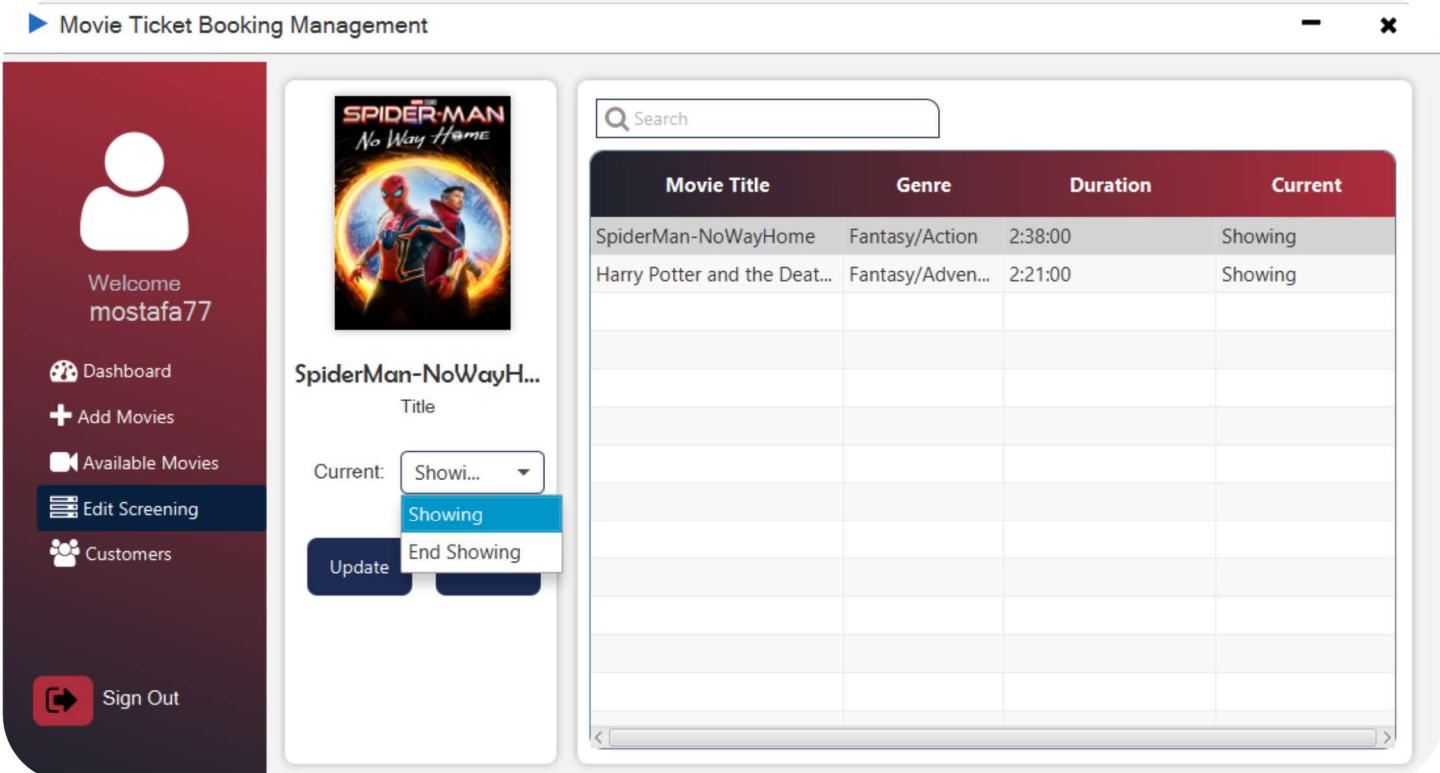
6- Receipt and Ticket Functionality



A key feature of the Movie Ticket Booking Management System (MTBMS) is its ability to generate receipts that also serve as tickets. Utilizing Jaspersoft Studio, the system creates detailed, professional-quality receipts by dynamically pulling the current customer information from the database. This includes all necessary information such as movie details, ticket number, and purchase details. These receipts can be easily printed by theater staff, providing customers with a clear and concise ticket for entry. This integration ensures that the receipt generation process is efficient, reliable, and seamlessly incorporated into the overall booking management workflow.



7- Edit Screening



As indicated before, each movie has an attribute indicating whether it is current (still showing) or has ended, and this view is responsible for editing this attribute. Firstly, all movies imported will be shown in the table with four different attributes for easy identification. Additionally, the admin has a search bar to find the movie using one of these attributes.

Once the admin selects the movie, its image and title will be displayed on the left side of the screen. The admin can then edit the "current" attribute of the movie using the combo box, which has only two options: "showing" or "end showing." After making the desired change, the admin can press the update button, and a confirmation message will be shown. If the admin does not select a movie from the table first, an error message will be displayed, indicating that the admin should select a movie before making any changes.

8- Customers

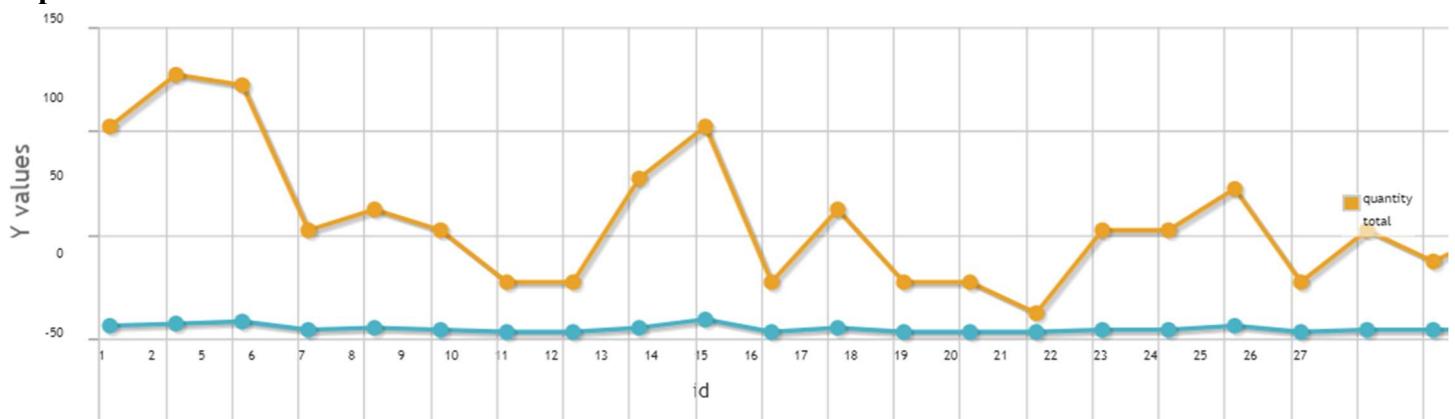
| Ticket Nu... | Movie Title | Date Checked | Time Checked |
|--------------|------------------------|--------------|--------------|
| 67 | trialmovies | 2024-05-17 | 18:19:56 |
| 68 | no way home prpro... | 2024-05-17 | 18:33:16 |
| 69 | trialmovies | 2024-05-17 | 18:34:46 |
| 70 | no way home prpro... | 2024-05-17 | 18:36:20 |
| 71 | trialmovies | 2024-05-17 | 18:43:03 |
| 72 | no way home prpro... | 2024-05-17 | 18:44:36 |
| 73 | trialmovies | 2024-05-17 | 18:46:15 |
| 74 | trialmovies | 2024-05-17 | 18:49:03 |
| 75 | no way home prpro... | 2024-05-17 | 18:50:26 |
| 76 | no way home prpro... | 2024-05-17 | 19:00:11 |
| 77 | trialmovies | 2024-05-17 | 19:02:25 |
| 78 | trialmovies | 2024-05-20 | 19:58:26 |
| 79 | Harry Potter and th... | 2024-05-21 | 10:01:26 |

This view is responsible for managing all customer data. After a customer buys a ticket or more in the available movies screen, their information is presented here in the customers screen on the table with four main attributes: ticket number, movie title, date, and time of purchase.

This view also allows the admin to delete a specific customer. The admin should first select the customer from the table, which will display the customer's data in the text boxes on the top left of the screen for confirmation. The admin then has the option to delete the customer, which will prompt a confirmation message. If the admin does not select a customer, an error message will be shown, indicating that the admin needs to select a customer first.

9- DataBase

The database is the backbone of the Movie Ticket Booking Management System (MTBMS), providing essential support for its various functionalities. It securely stores comprehensive data, including customer profiles, movie schedules, showtimes, seat availability, and transaction records. The system retrieves and updates this information in real-time, ensuring that all operations are accurate and up-to-date. This robust data management allows for efficient handling of reservations, cancellations, and ticket issuance. Additionally, the database supports detailed reporting and analytics, enabling theater managers to make informed decisions based on current and historical data. Overall, the database ensures the MTBMS operates smoothly, reliably, and securely, enhancing the overall management and customer experience.



Conclusion

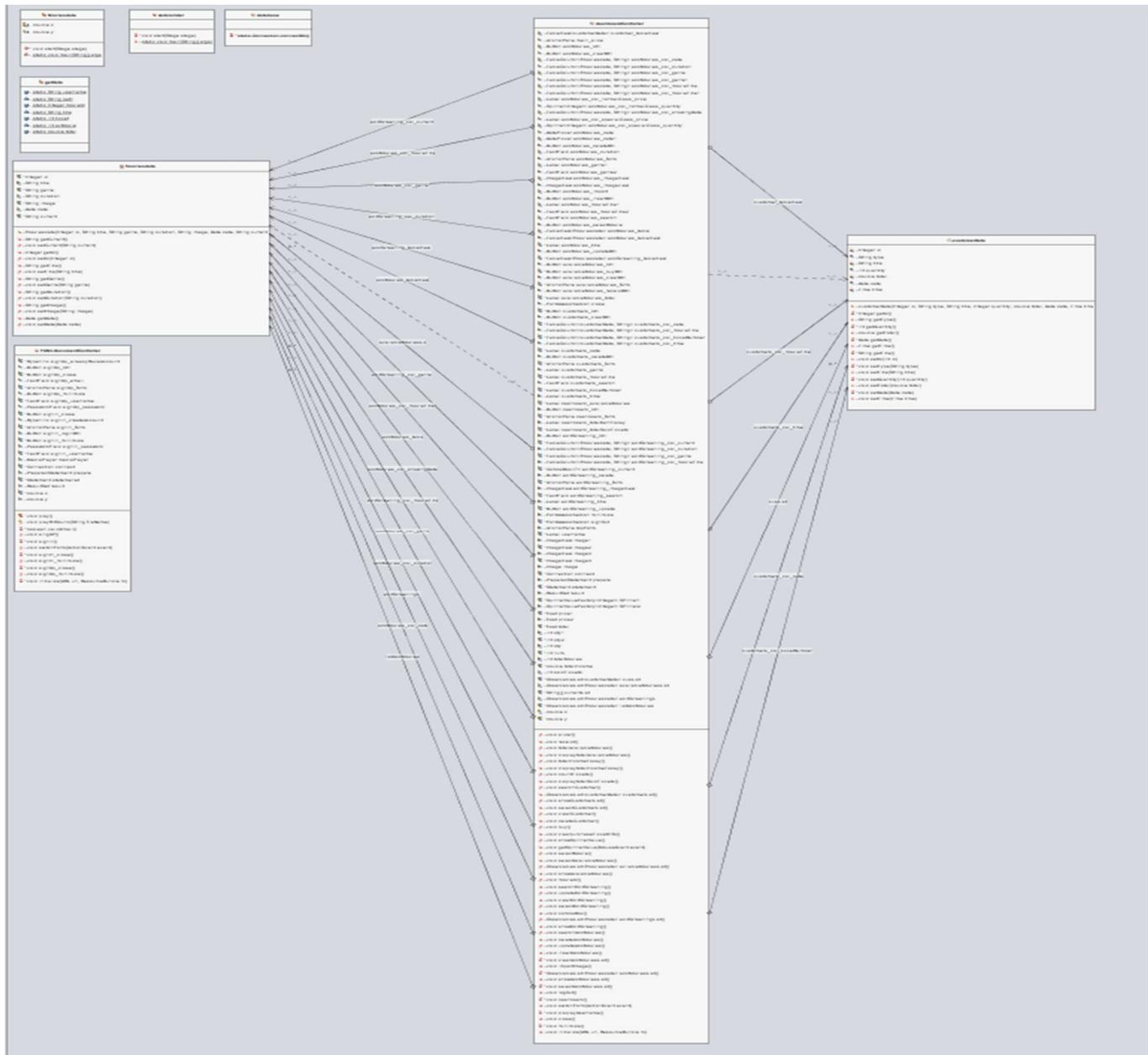
The Movie Ticket Booking Management System project embodies the intersection of technological innovation and practical application, aiming to deliver a superior management experience while addressing the operational challenges faced by theaters. Through meticulous design, development, and implementation using JavaFX, the MTBMS leverages a robust MySQL database to ensure accurate and efficient management of customer information, movie schedules, and ticket bookings. This database serves as the backbone of the system, securely storing and processing essential data to provide real-time updates and seamless operations.

The integration of MySQL allows for comprehensive data management capabilities, including handling large volumes of transactional data with speed and reliability. By ensuring that customer profiles, reservation details, and transaction records are consistently updated and easily accessible, the system enhances the efficiency of theater operations and improves the overall customer experience. Additionally, the database supports advanced reporting and analytics, enabling theater managers to gain insights into sales trends, customer preferences, and operational performance, which are crucial for informed decision-making and strategic planning.

By seamlessly integrating these technological components, the MTBMS sets a new standard in the digital transformation of ticket booking management systems. It addresses the need for modern, efficient solutions in the entertainment industry, ultimately contributing to its evolution. The MTBMS demonstrates how innovative use of technology can enhance operational efficiency, improve user experience, and provide valuable insights for better management and growth.

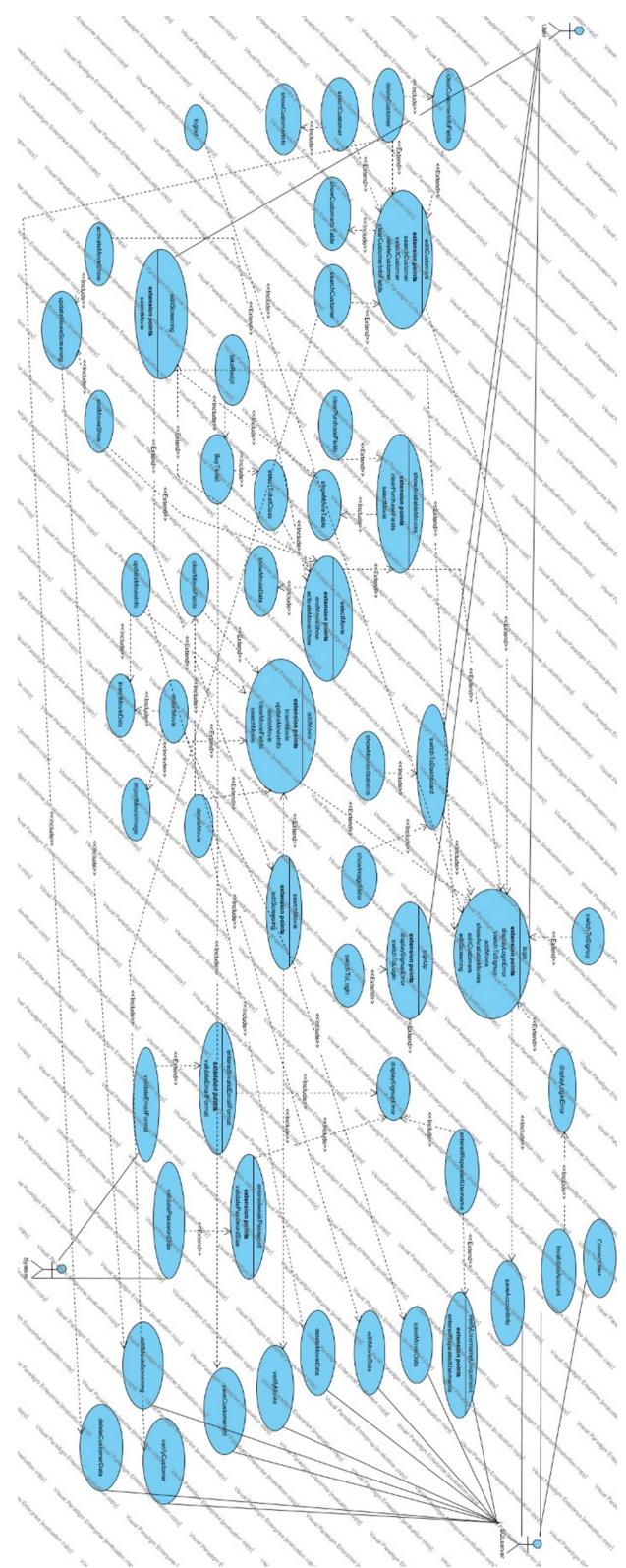
UML Diagrams

1- Class Diagram



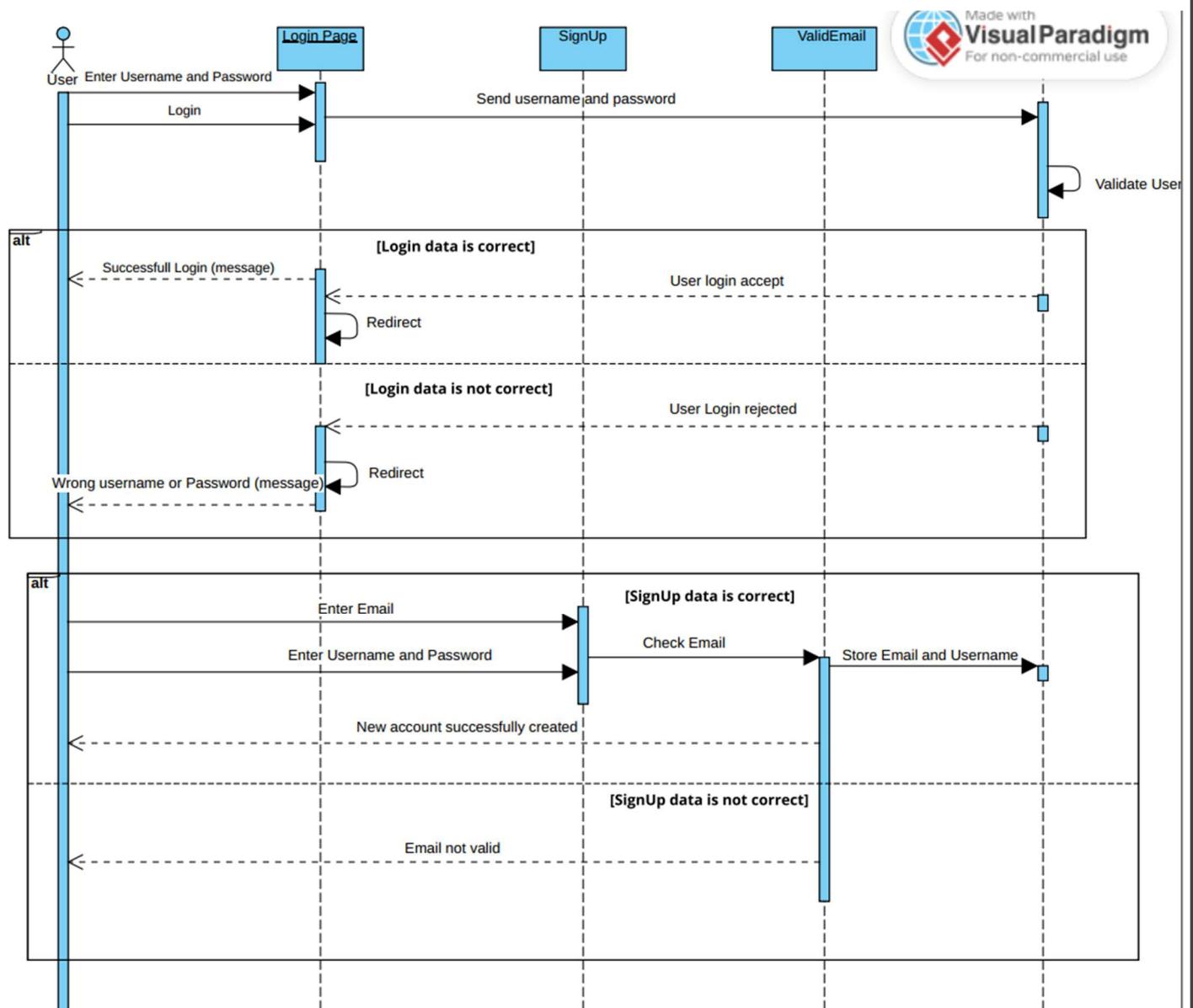
Detailed and clear. cdg File exists in the project Folder.

2- Use Case Diagram



3- Sequence Diagram

login – Signup page



After Login

