CINEMAGIC TICKET RESERVATION SYSTEM

J-PRO Vocational School

FEBRUARY 29, 2023

Group - I

Batch 3

Group Members List

- Htet Wai Hlyan Kyaw (Project Leader)
- Eaint Akari Zin
- Hnin Thet Wai
- Theint Nadi Shune Lae
- Aung Shan Thu

Table of Contents

Introduction

A ticket reservation system for cinemas encompasses a comprehensive set of methodologies tailored to streamline the ticket booking process, ensuring a seamless and user-friendly experience for patrons. The project's objective is to develop a JAVA-based reservation system capable of efficiently managing movie screenings, theater staff information, and customer bookings. Leveraging NetBeans (Java) and MySQL-connector for database connectivity, the system incorporates various UML (Unified Modeling Language) diagrams to enhance its management of complexities. The Cinema Ticket Reservation System is poised to redefine the interaction dynamics between moviegoers and cinema personnel. It caters to the diverse needs of stakeholders: patrons can easily reserve tickets through available staff members, who, in turn, can effectively handle and process these requests. From movie selection and seat allocation to payment processing and reservation tracking, every aspect has been meticulously crafted to ensure a hassle-free experience.

Objectives of This Project

The objectives of the project are

- Develop a Comprehensive Ticket Reservation System: Create an efficient system for managing ticket sales, seating arrangements, and cinema operations, exclusively for staff and administrators.

- Improve Operational Efficiency: Streamline ticket processing workflows, optimize seat allocation, and simplify administrative tasks to enhance overall efficiency.

- Enhance Revenue Generation: Provide tools for effective ticket management, pricing strategies, and promotions to maximize revenue opportunities.

- Ensure Accuracy and Timeliness: Design the system to process ticket bookings accurately and promptly, minimizing errors and delays.

- Utilize Java Programming for Adaptability: Develop the system using Java programming language for scalability and adaptability to the cinema's specific needs.

- Leverage Collective Expertise for Collaboration: Harness the expertise of team members to effectively design, develop, and implement the ticket reservation system, ensuring timely completion.

- Provide Comprehensive Management Tools: Offer admins access to reporting and analytics features for monitoring ticket sales, attendance, and performance analysis to support informed decision-making.

System Requirements

Software Implementation Requirements

The following information describe the software requirements of the Ordering System for Apple's Products.

- IDE   : NetBeans
- Plug-in   : Mysql-connector-j-8.2.0.jar
- JDK   : JDK 8.0
- Database Server   : MySQL 8.2.0
- Others   : Database Details (Name – cinemagic, Username – root)

Functional Requirements

Admin Module:

- **Access to Admin Dashboard**: Admins gain access to the Admin Dashboard by logging in with admin account, granting them administrative privileges to oversee cinema operations.

- **Management of Movie Listings and Staff Information**: Admins can view cinema information, update staff information, and oversee the scheduling of movie screenings.

- **Review of Statistical Information**: Admins have access to comprehensive data on ticket sales, total staffs, peak showtime, popular seat, trending movie, and revenue generated from movie screenings.

Staff Module:

- **Login with Staff Accounts:** Staff members log in using individual staff accounts, which are created and managed by the Admin, providing them access to the Cinemagic system.

- **View and Update Personal Information:** Staff members can view their personal information stored in the system and update it as needed, including the option to reset passwords.

- **Access to Movie Listings and Ticketing System:** Staff members can access movie listings, manage seat availability, and process ticket sales for customers attending movie screenings.

- **Facilitate Customer Transactions:** Staff members are responsible for facilitating customer transactions, managing seat allocations, and ensuring a smooth moviegoing experience for patrons.

- **View Details of Own Transactions:** Staff members have access to details of transactions they have processed, including ticket sales and seating arrangements, to aid in customer service and operational management.

Project Schedule

The project schedule for the entire system, spanning from January 1st to February 29th, is illustrated below.
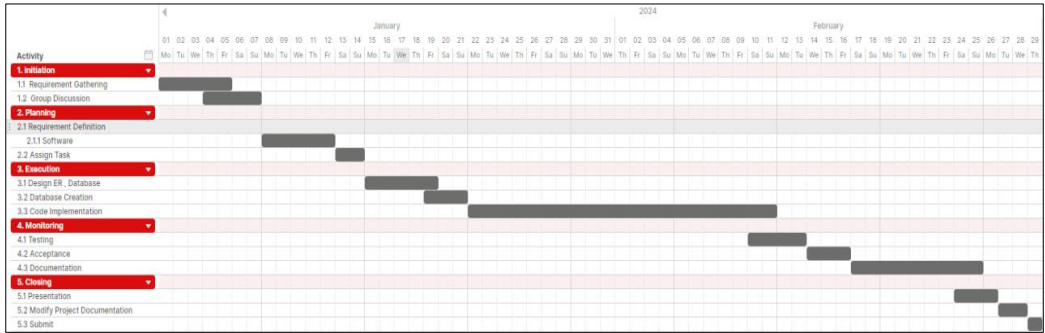
Figure 1: Project Schedule

The Gantt chart featured within this project documentation serves as an invaluable tool for illustrating the intricate timeline and advancement of tasks essential for the successful implementation of the Cinemagic ticket reservation system. Each task is distinctly represented by a bar, carefully positioned along the timeline to reflect its start and end dates, while the length of the bar denotes its duration. This visual representation not only provides a snapshot of the project's progression but also offers stakeholders a comprehensive overview of projected timelines. By encapsulating the project's trajectory in a single visual format, the Gantt chart facilitates effective project management, enabling stakeholders to monitor progress, identify potential bottlenecks, and adjust strategies as needed to ensure timely delivery of the Cinemagic ticket reservation system.

Business Modeling

The business model for Cinema Ticket Reservation System is represented with the following Diagram.

Use Case Diagram

Use case diagram for Cinema Ticket Reservation System is described with following figure.
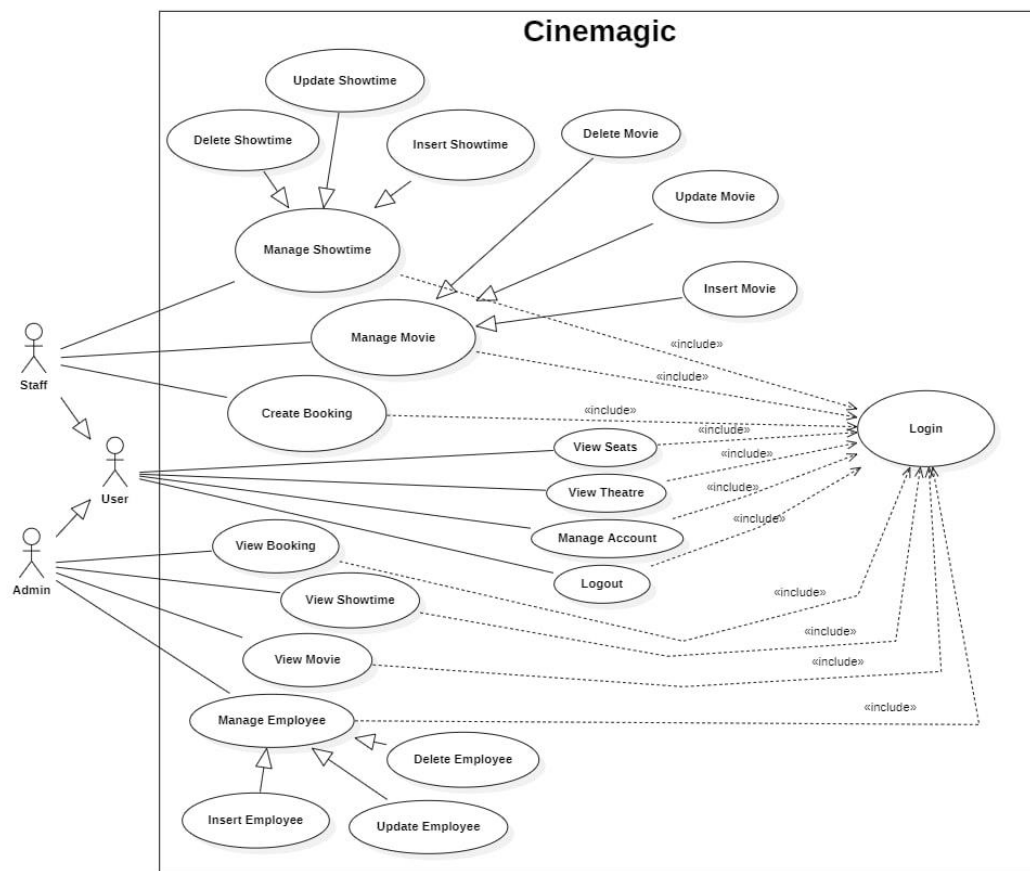
Figure 2: Use Case Diagram for Cinemagic Ticket Reservation System

Data Modeling

Data Flow Diagram

Data Flow Diagram (DFD) for Cinemagic Ticket Reservation System is described with following figure.
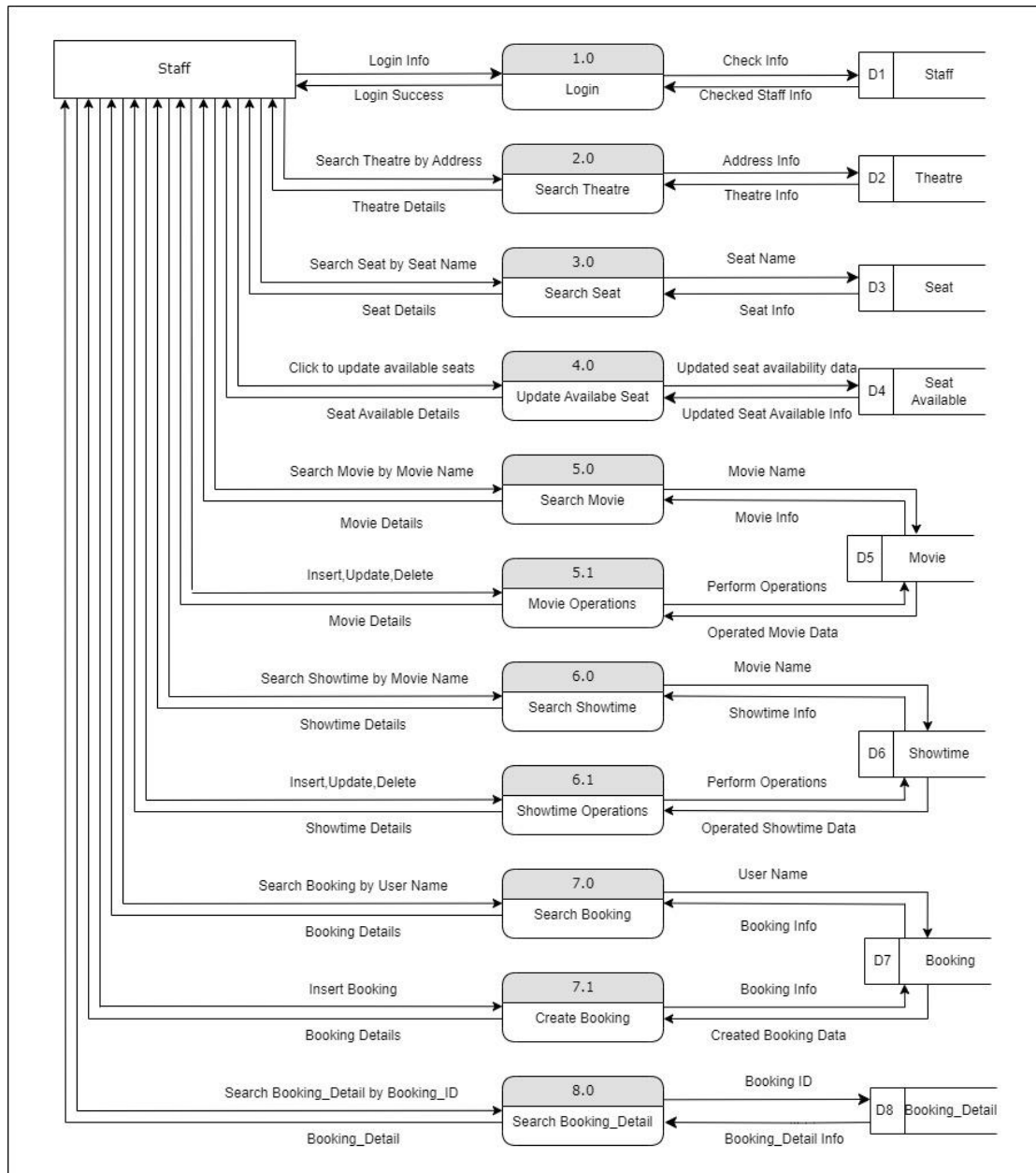
Figure 3: Data Flow Diagram of Cinemagic Ticket Reservation System

Entity Relationship Diagram

Entity Relationship (ER) Diagram for Cinemagic Ticket Reservation System is described with following figure.
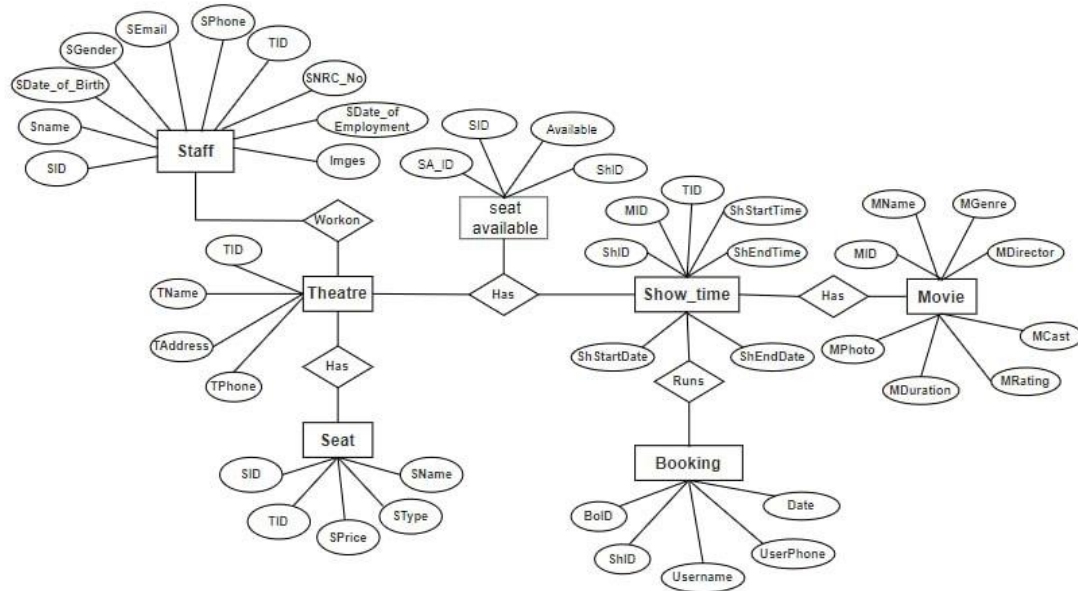
Figure 4: Entity Relationship Diagram of Cinemagic Ticket Reservation System

Database design

Database design for Cinemagic Ticket Reservation System is described with following figure.
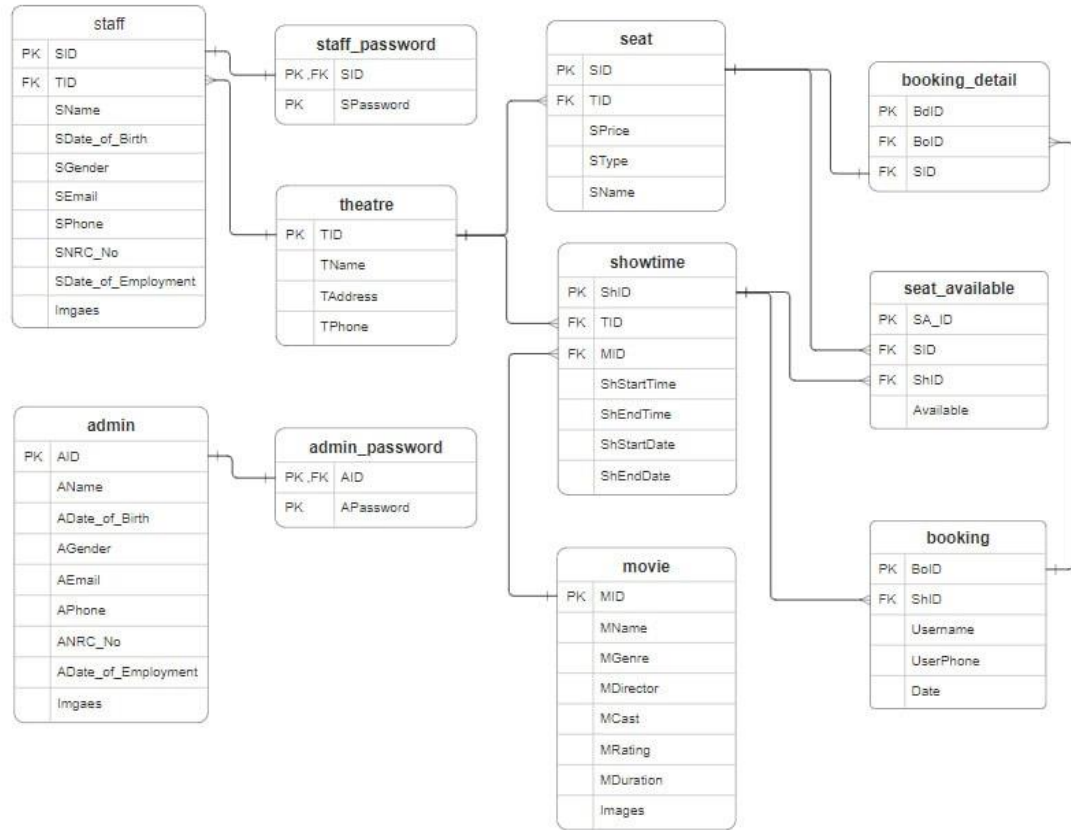
Figure 5: Database Design of Cinemagic Ticket Reservation System

Data Dictionary

Data dictionary for Cinemagic Ticket Reservation System is described with following tables.

Admin Table

Attribute Name	Data Type	Size	Status	Description
AID	int	11	primary key, auto-increment	Admin Identification Number
AName	varchar	255	Not null	Name of the Admin
ADate_of_Brith	date	-	Not null	Date of birth of Admin
AGender	varchar	10	Not null	Gender of Admin
AEmail	varchar	255	Not null	Email of Admin
APhone	varchar	20	Not null	Phone of Admin
ANRC_No	varchar	30	Not null	NRC No of Admin
ADate_of_Employment	date	-	Not null	Date of Employment of Admin
Images	blob	-	Null	Images of Admin

Admin Password Table

Attribute Name	Data Type	Size	Status	Description
AID	int	11	primary key, foreign key	Admin Identification Number
APassword	varchar	64	Primary key	Password of Admin

Staff Table

Attribute Name	Data Type	Size	Status	Description
SID	int	11	primary key, auto-increment	Staff Identification Number
SName	varchar	255	Not null	Name of the Staff
SDate_of_Brith	date	-	Not null	Date of birth of Staff
SGender	varchar	10	Not null	Gender of Staff
SEmail	varchar	255	Not null	Email of Staff
SPhone	varchar	20	Not null	Phone of Staff
TID	int	11	Foreign key	Theatre Identification Number
SNRC_No	varchar	30	Not null	NRC No of Staff
SDate_of_Employment	date	-	Not null	Date of Employment of Staff
Images	blob	-	Null	Images of Staff

Staff Password

Attribute Name	Data Type	Size	Status	Description
SID	int	11	primary key, foreign key	Staff Identification Number
SPassword	varchar	64	Primary key	Password of Staff

Movie Table

Attribute Name	Data Type	Size	Status	Description
Movie	int	11	primary key, auto-increment	Movie Identification Number
MName	varchar	255	Not null	Name of Movie
MGenre	varchar	255	Not null	Genre of Movie
Mdirector	varchar	255	Not null	Director of Movie
MCast	varchar	255	Not null	Cast of Movie
MRating	float	-	Not null	Rating of Movie
MDuration	varchar	15	Not null	Duration of Movie
Images	blob	-	Null	Images of Movie

Showtime Table

Attribute Name	Data Type	Size	Status	Description
ShID	int	11	primary key, auto-increment	Showtime Identification Number
MID	int	11	Foreign key	Movie Identification Number
TID	int	11	Foreign key	Theatre of Showtime
ShStartTime	varchar	15	Not null	Start time of Showtime
ShEndTime	varchar	15	Not null	End time of Showtime
ShStartDate	date	-	Not null	Start date of Showtime
ShEndDate	date	-	Not null	End date of Showtime

Theatre Table

Attribute Name	Data Type	Size	Status	Description
TID	int	11	primary key, auto-increment	Theatre Identification Number
TName	varchar	100	Not null	Name of Theatre
TAddres	varchar	255	Not null	Adress of Theatre
TPhone	varchar	20	Not null	Phone of Theatre

Seat Table

Attribute Name	Data Type	Size	Status	Description
SID	int	11	primary key, auto-increment	Seat Identification Number
TID	int	11	Foreign key	Theatre Identification Number
SPrice	float	-	Not null	Price of seat
SType	varchar	10	Not null	Type of seat
SName	varchar	15	Not null	Name of seat

Seat Available Table

Attribute Name	Data Type	Size	Status	Description
SA_ID	int	11	primary key, auto-increment	Seat Available Identification Number
SID	int	11	Foreign key	Seat Identification Number
ShID	int	11	Foreign key	Showtime Identification Number
Available	varchar	10	-	Availability of Seat

Booking Table

Attribute Name	Data Type	Size	Status	Description
BoID	int	11	primary key, auto-increment	Booking Identification Number
ShID	int	11	Foreign key	Showtime Identification Number
Username	varchar	255	Not null	Name of user
UserPhone	varchar	20	Not null	Phone of user
Date	date	-	Not null	Date of booking

Booking Detail Table

Attribute Name	Data Type	Size	Status	Description
BDID	int	11	primary key, auto-increment	Booking Detail Identification Number
BoID	int	11	Foreign key	Booking Identification Number
SID	int	11	Not null	Seat Identification Number

Implementation of the System

The Ticket Reservation System developed for Cinemagic cinema offers a robust solution tailored to streamline the ticket booking process for movie enthusiasts. With the database named "Cinemagic," authenticated with credentials (username: root, password: root), the system efficiently retrieves and manages comprehensive data pertinent to movie screenings, seat availability, and customer preferences. Employing JFrame, the user interface (UI) is thoughtfully designed to prioritize user convenience and visual appeal, ensuring an intuitive navigation experience. Each component, from panels to buttons and tables, is meticulously implemented to facilitate seamless interaction and efficient booking. In summary, the Ticket Reservation System for Cinemagic cinema strikes a balance between simplicity and sophistication, offering a user-friendly platform that simplifies the ticket booking process while providing added value through personalized recommendations.

Screen Hierarchy Figure

Screen Hierarchy Figure for Cinemagic Ticket Reservation System is described as with following figure.
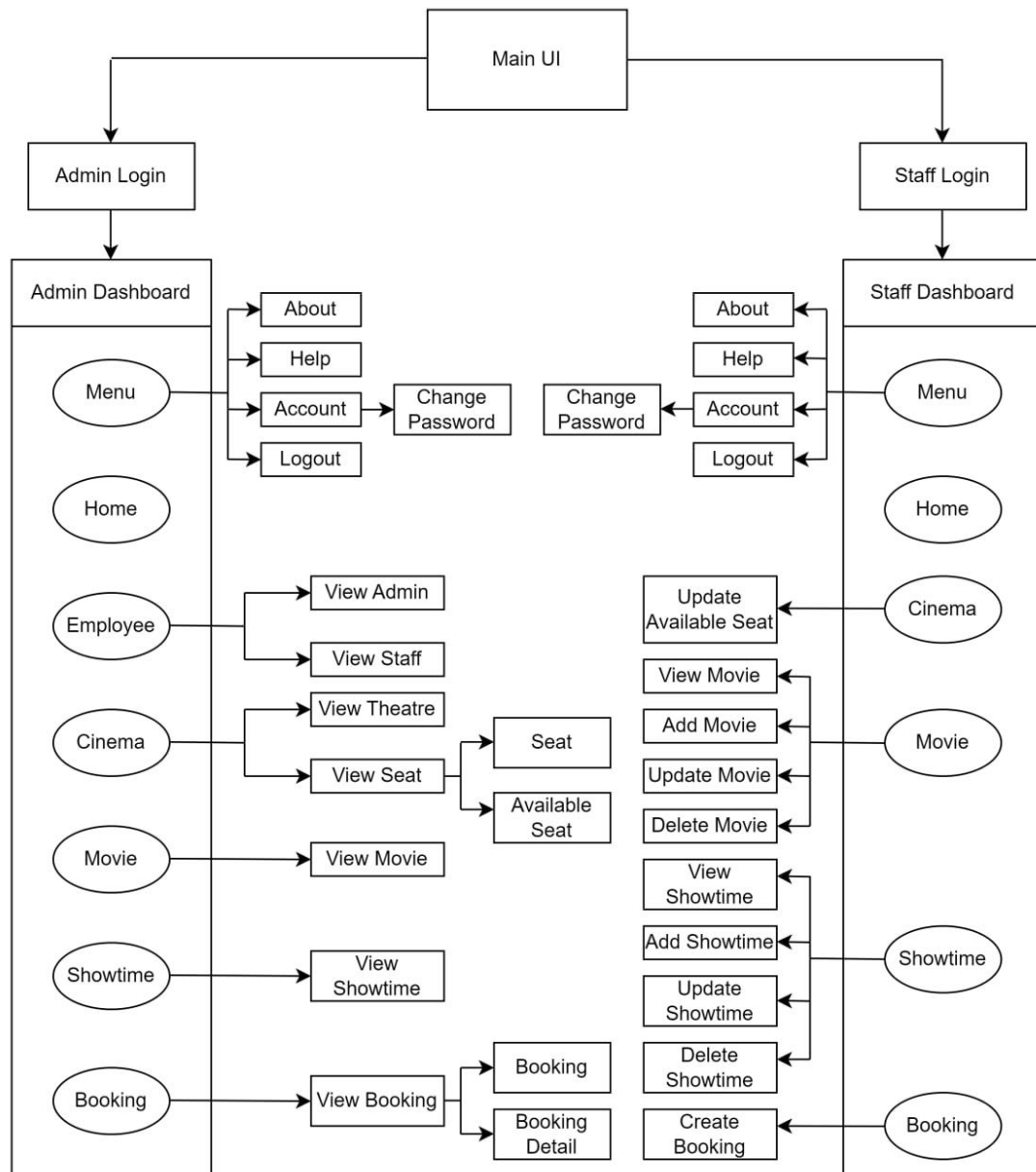
Figure 6: Screen Hierarchy Structure

As shown in Figure, the very first of the program start with Welcome UI following Login UI, Admin Dashboard UI, and Staff Dashboard UI. All of the detail designs, functions, panels are shown below.
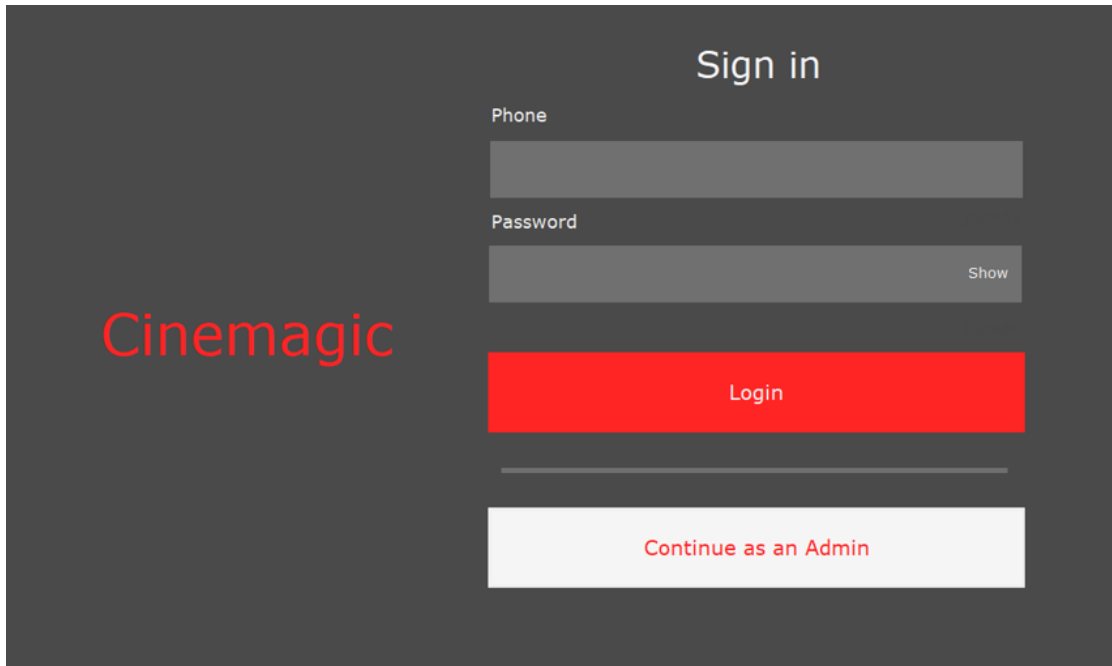
Main UI

Figure 7: Main UI
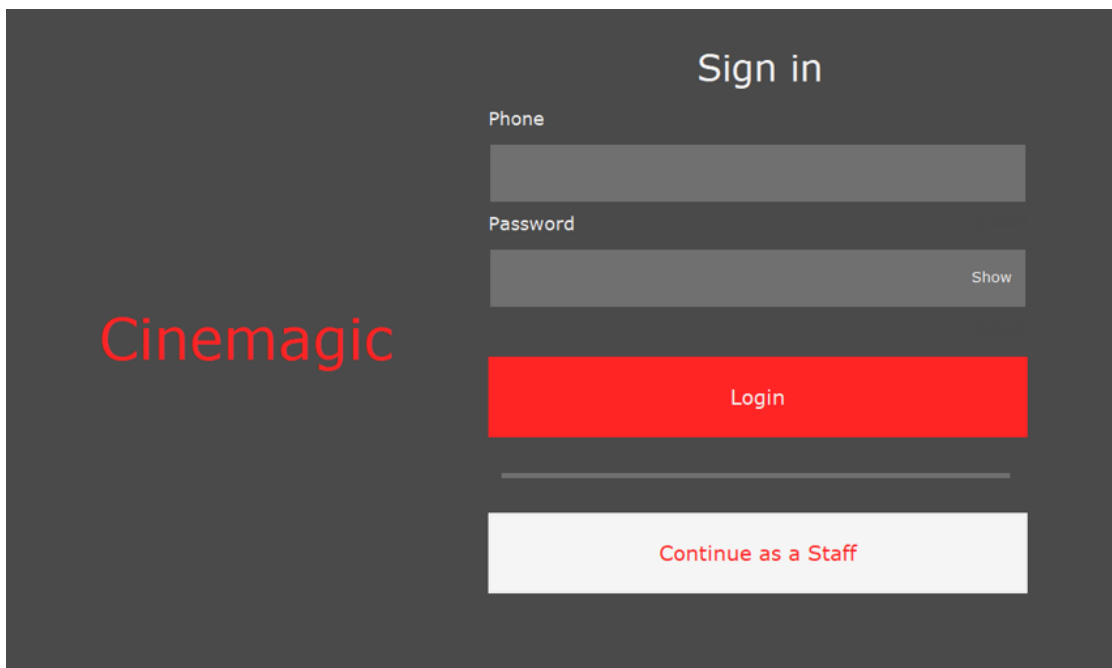
The initial screen of the application displays a welcome frame followed by the staff sign in frame. Within the staff sign in frame, there is an option to access the admin sign in functionality by clicking on the "Continue as an Admin" button. Upon clicking this button, users are directed to the admin login frame for authentication. Additionally, the admin sign in frame contains a staff sign in button as shown in Figure 9.

Login UI

Figure 8: Staff Sign In Frame

Figure 9: Admin Sign In Frame
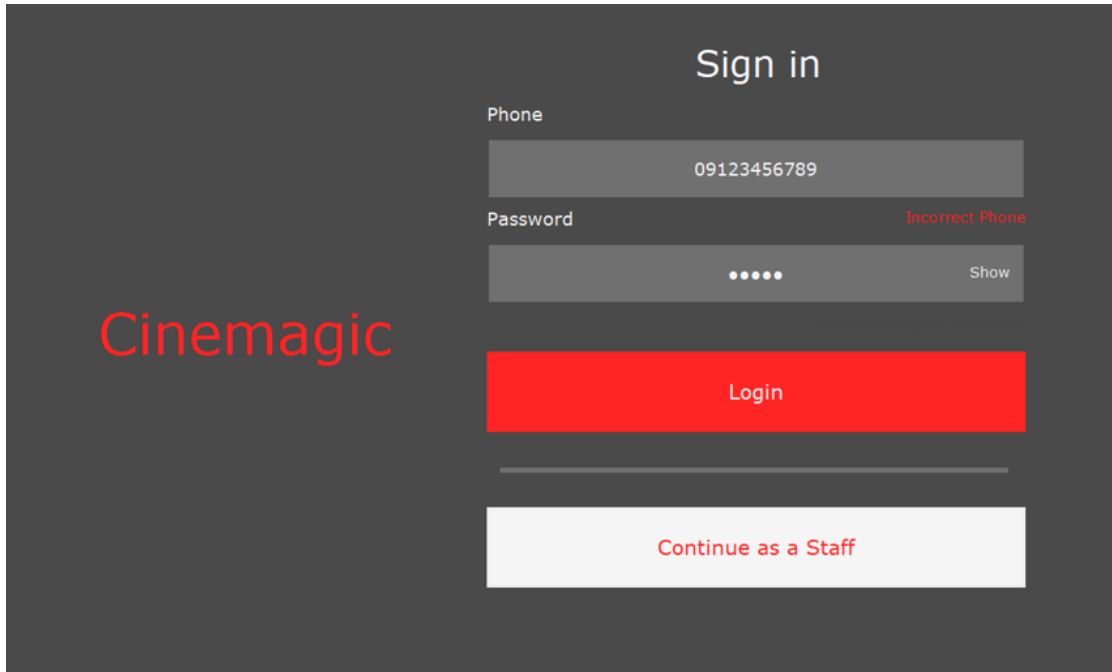
Subsequently, validation for both phone numbers and passwords is implemented in both the admin sign in frame and the staff sign in frame. If the user fails to enter the required data, a validation prompt appears, reminding them to input both the phone number and password. See Figure 10 for a graphical depiction of this validation process.
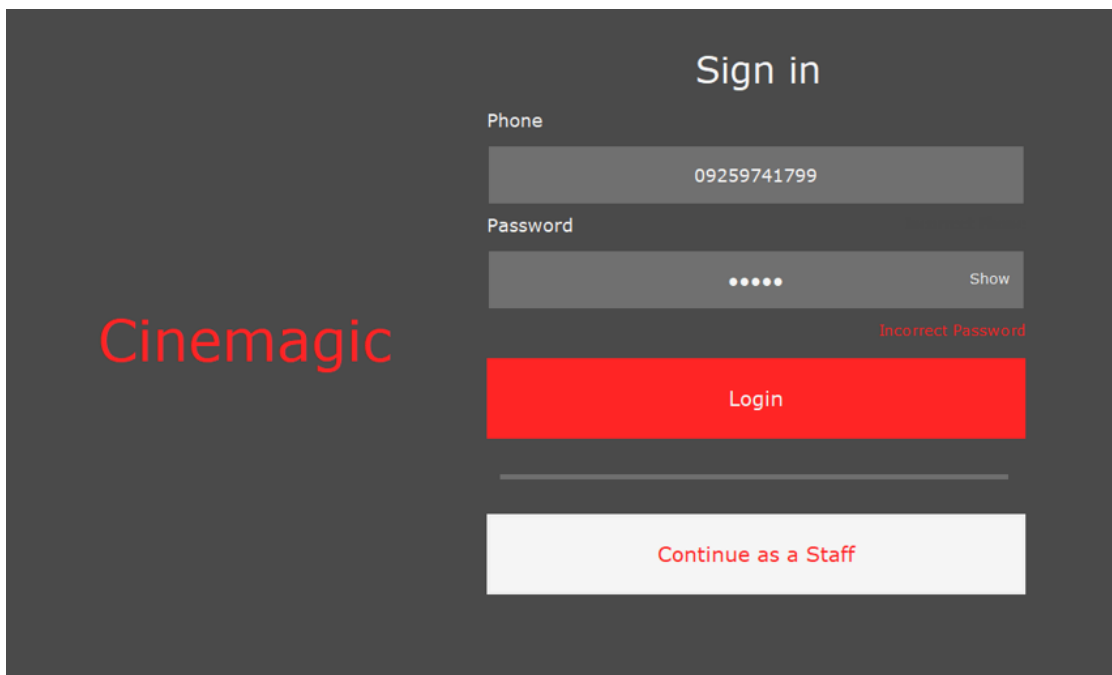
Figure 10: Admin Sign In Frame Error Handling: Empty Input

We validate each phone number and password individually. If the phone number filled by the user does not exist in the database, an incorrect phone number prompt appears. Similarly, if the password filled by the user does not match the password stored in the database, an incorrect password prompt appears. Figures 11 and 12 provide visual depictions of the validation process.

Figure 11: Admin Sign In Frame Error Handling: Invalid Phone Input

Figure 12: Admin Sign In Frame Error Handling: Invalid Password Input

Additionally, a function is implemented to toggle between showing and hiding the password for security purposes.
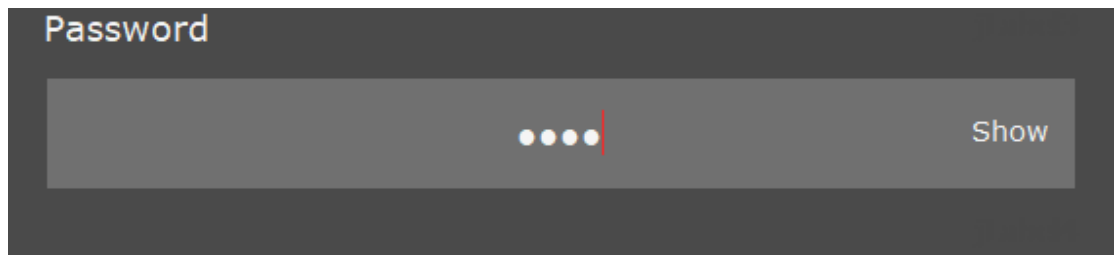
Figure 13: Password Hide Example
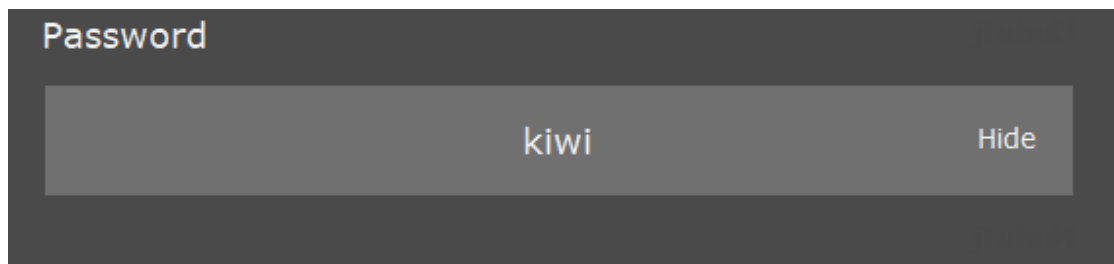
Figure 14: Password Show Example

If the user fills in all the required data correctly, a "Successfully Logged In" alert box will appear to indicate successful authentication.
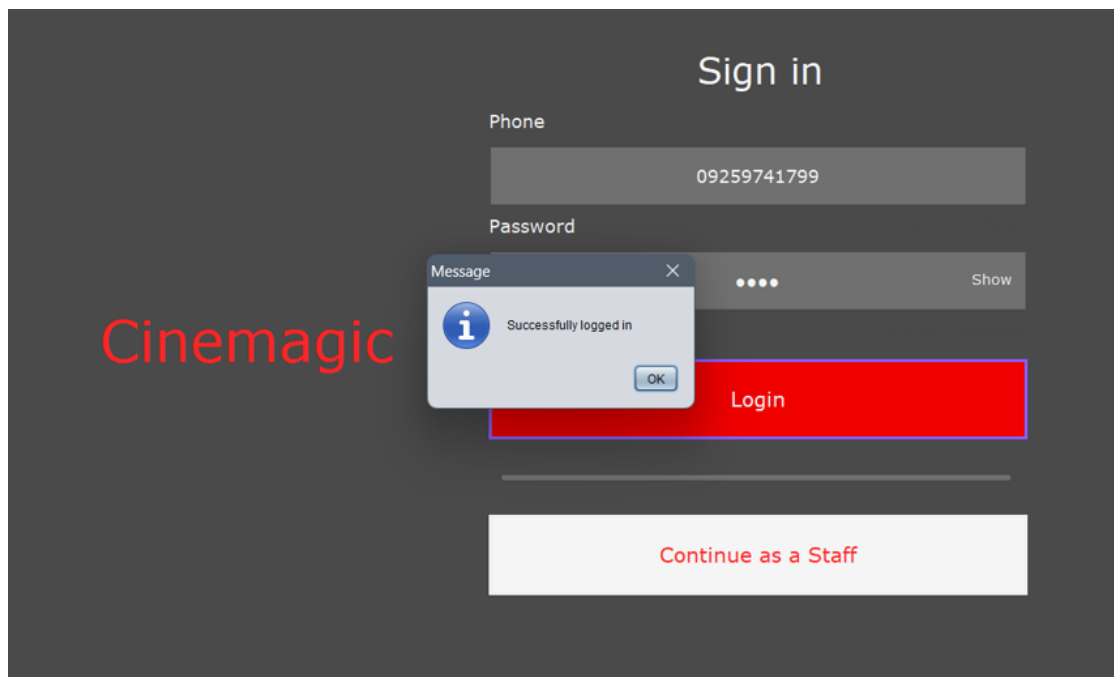
Figure 15: Admin Sign In Success

After successful sign in, the user will be directed to the relevant main frame. This main frame includes a hamburger menu bar. Upon clicking the hamburger menu bar, the side navigation bar will change and will include four buttons: "About," "Help," "Account," and "Logout."
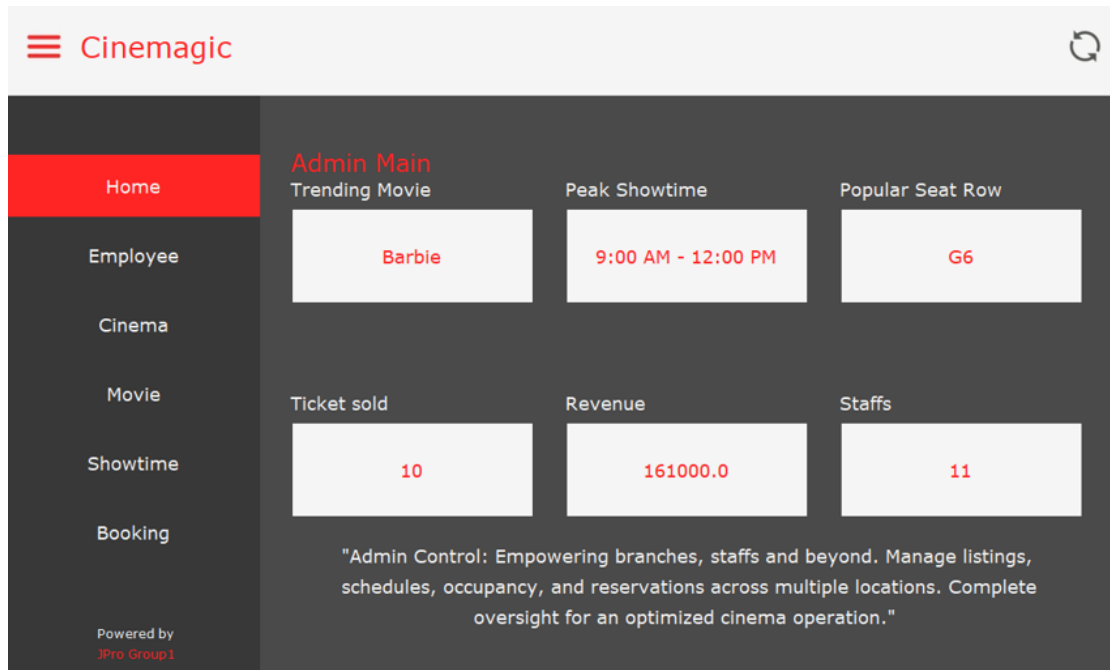
Figure 16: Admin Home Page

- Clicking the "About" button will open a frame about our system, Cinemagic.
- Clicking the "Help" button will trigger the display of a help method for our Cinemagic system, as depicted in Figure 18, assisting users in navigating and using our platform effectively.
- Clicking the "Account" button will display the user account frame, which includes user information and settings. This is demonstrated in Figure 19.
- Clicking the "Logout" button will log the user out of the system.
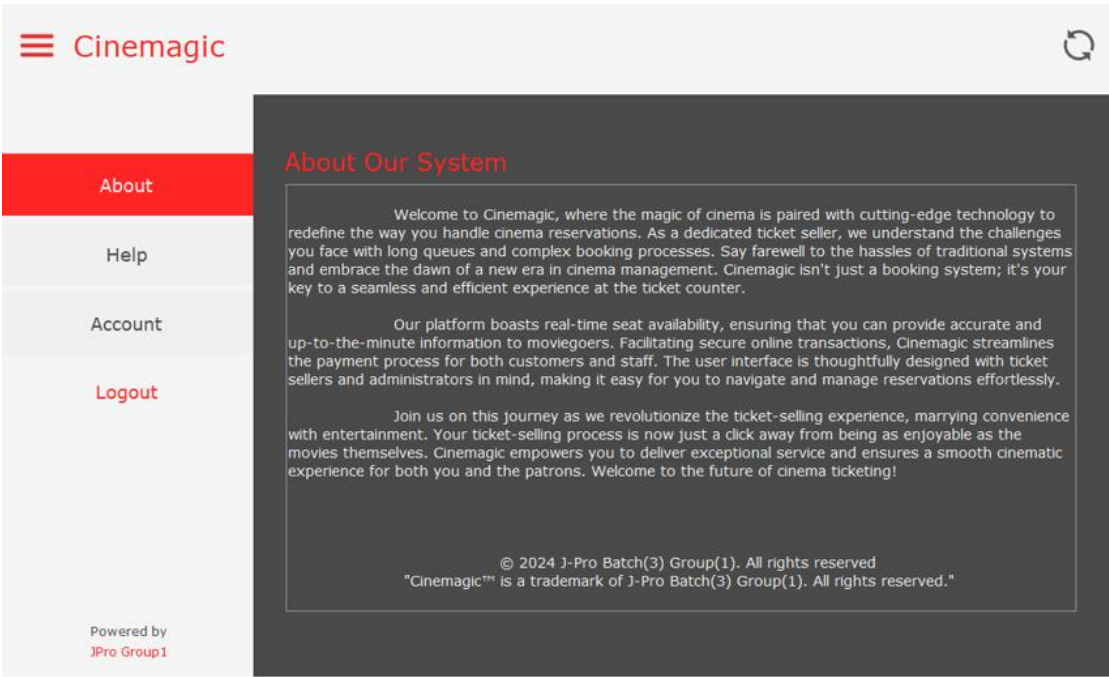
Figure 17: Menu Item: About
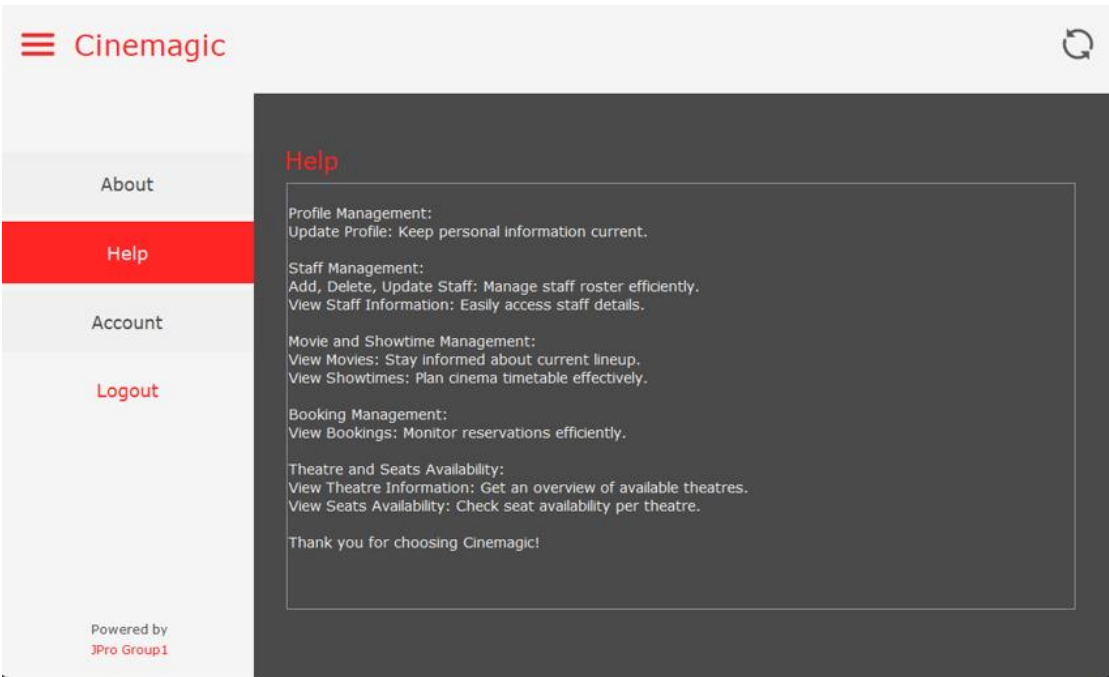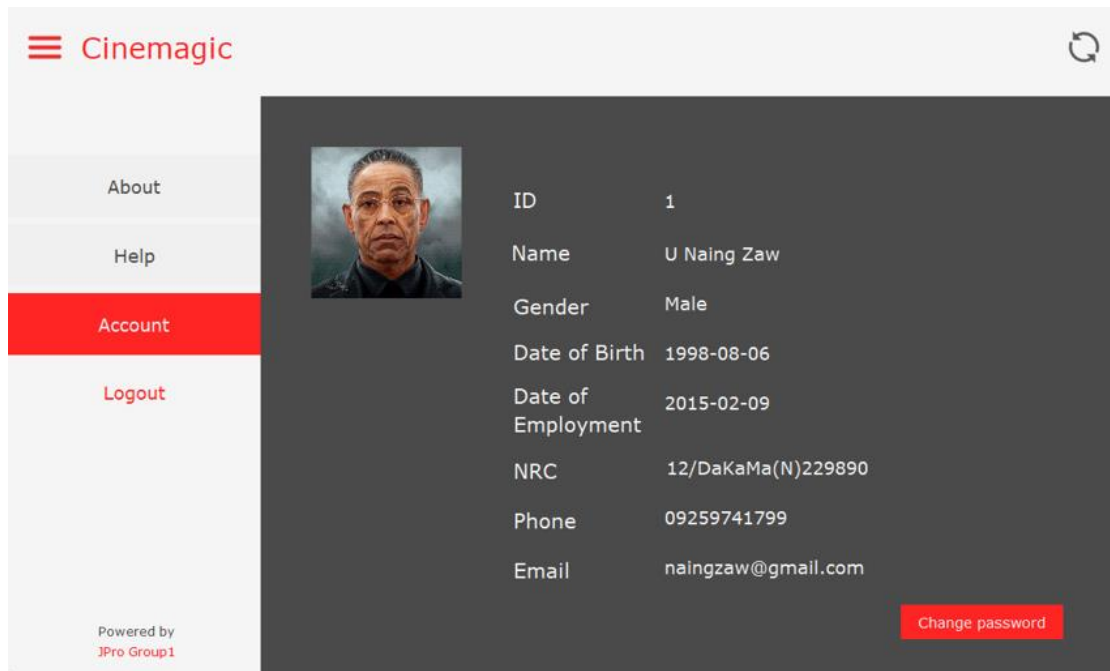
Figure 18: Menu Item: Help
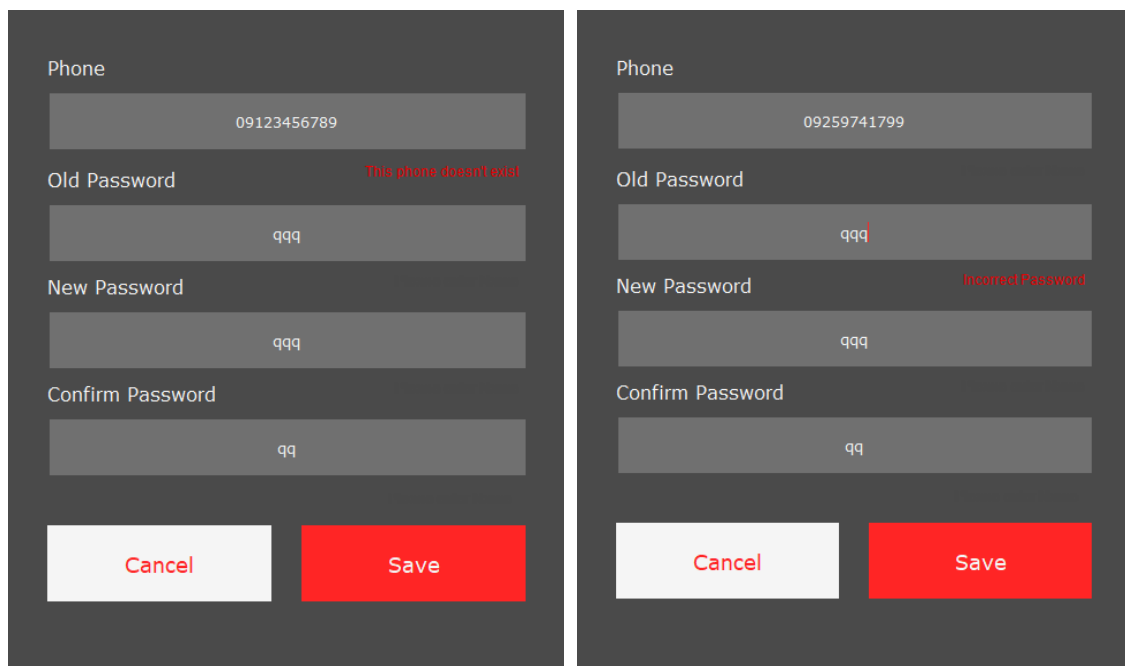
Figure 19: Menu Item: Account

In the account frame, there is a "Change Password" button. Upon clicking this button, a frame will appear containing fields for the user to enter their necessary information, to update their password. In the password change frame, fields are validated individually. Alert appears if phone number doesn't match database, old password is incorrect, or confirm password doesn't match new one.

Figure 20: Phone and Password Validation
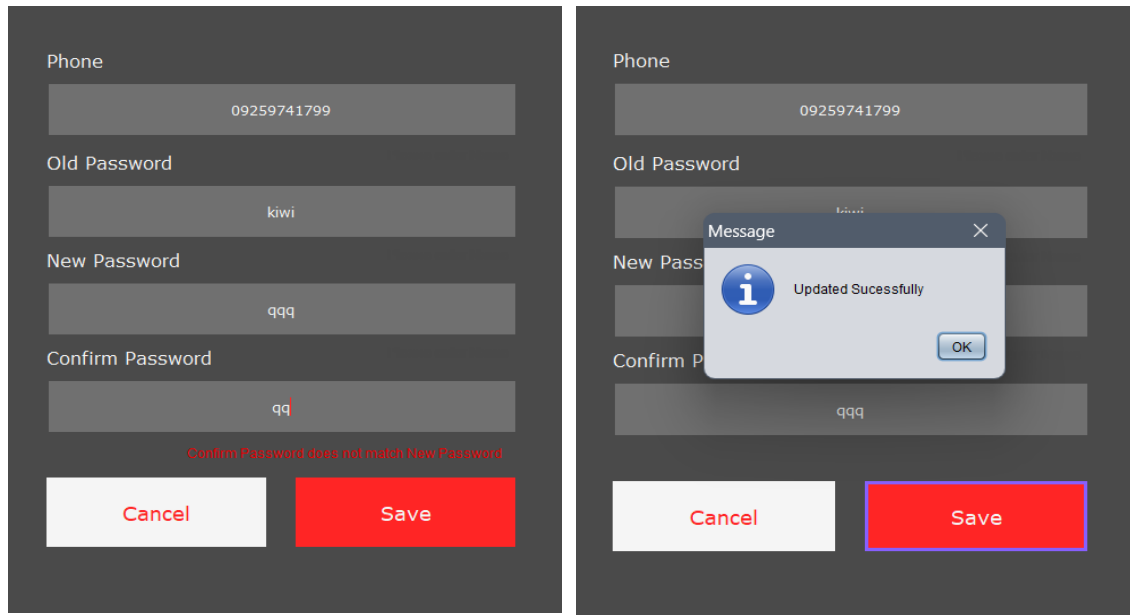
Figure 21: Confirm Password Validation and Update Success

Upon correctly filling in all the necessary information and passing the validation criteria, users can click on the "Save" button to confirm their changes. Subsequently, they will receive an 'Updated Successfully' alert, confirming the successful update of their password.

Admin Dashboard UI

The following image displays the 'Admin Dashboard UI,' intended solely for administrator use within the system.
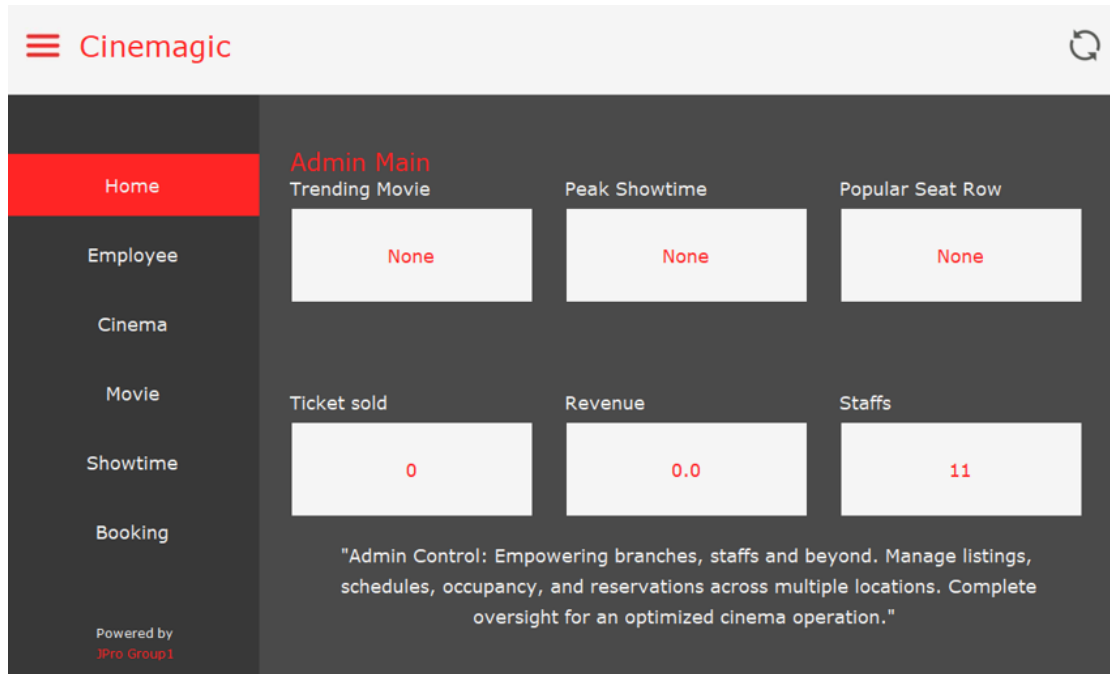
Figure 22: Admin Home Page
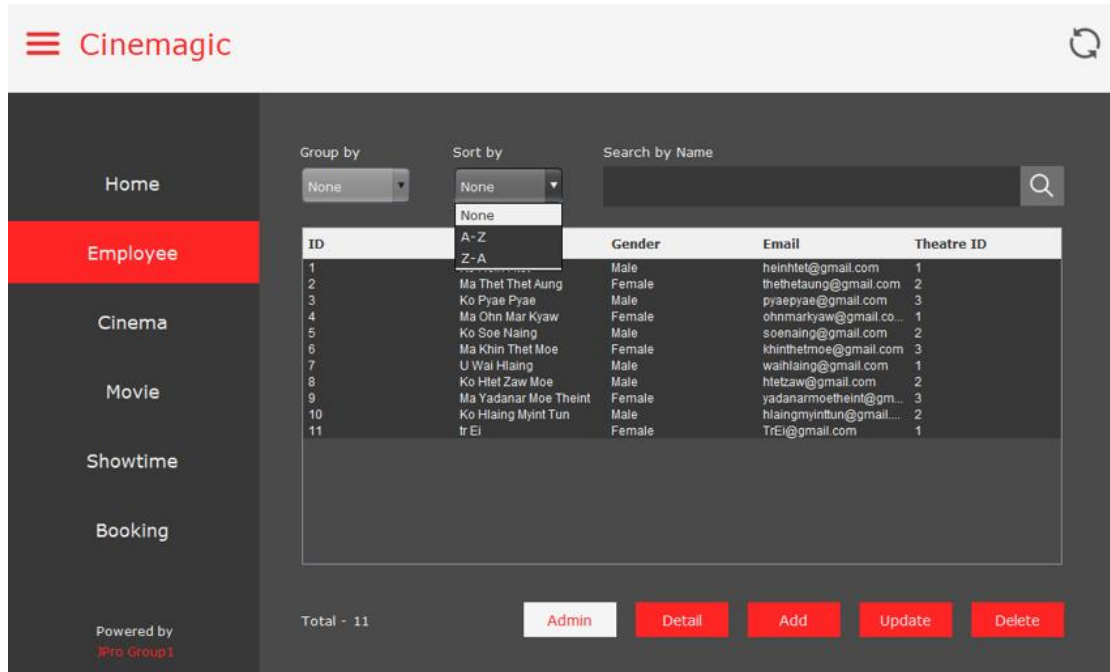
The navigation panel acts as a menu bar to select the following titles with icons including "Home", "Employee", "Cinema", "Movie", "Showtime" and lastly "Booking". When the admin clicks "Home" tab from the navigation bar, the admin will see this "Admin Main" page as shown in Figure 22. In Home panel, six small panels of Trending Movie, Peak Showtime, Popular Seat Row, Ticket sold, Revenue and Staffs are included.

When the admin clicks "Employee" tab from the navigation bar, the admin will see this "Employee" page as shown in Figure 23. The information of the staff in the database can be seen on this table where admin can access and manage staff information. To functionalize the table, the following features are included.

Figure 23: Admin Dashboard's Employee Panel

Staff information can be sorted by alphabetically such as staff name from A-to-Z (ascending) and Z-to-A (descending). The information will rearrange on the table as shown in Figure 24.

Figure 24: Sort by Employee's name

Figure 25: The result of sorting Employees' names alphabetically from A to Z

Besides, admin can easily and quickly find the information of staff that can be grouped by specific Theatre ID, as shown in Figure 26.
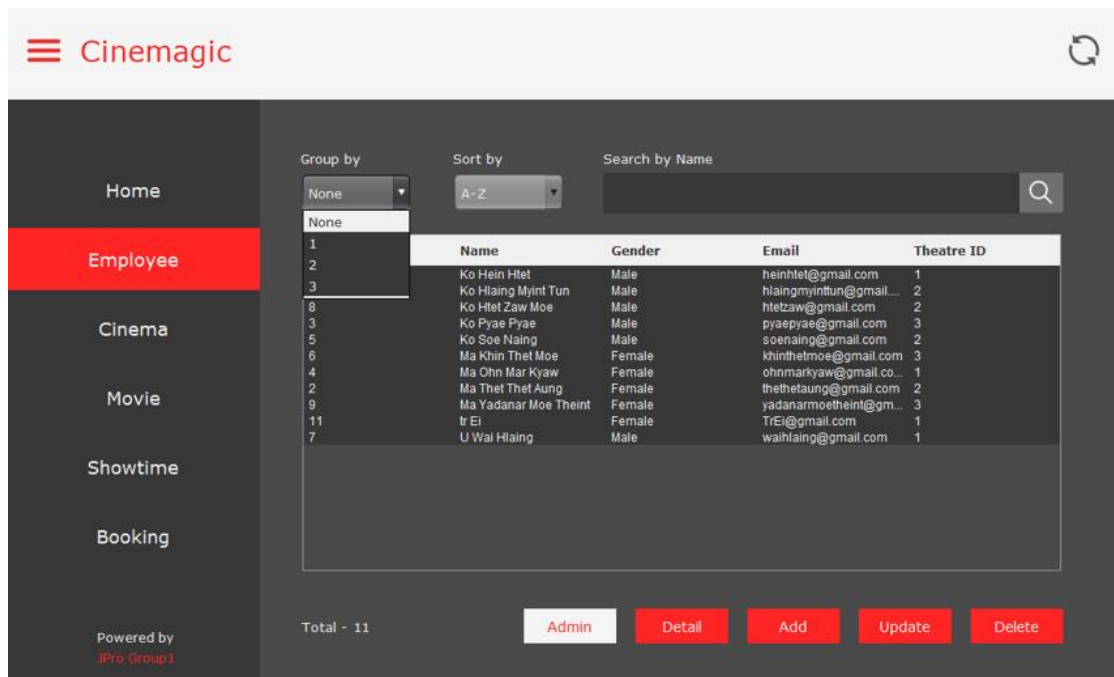
Figure 26: Group by Theatre ID
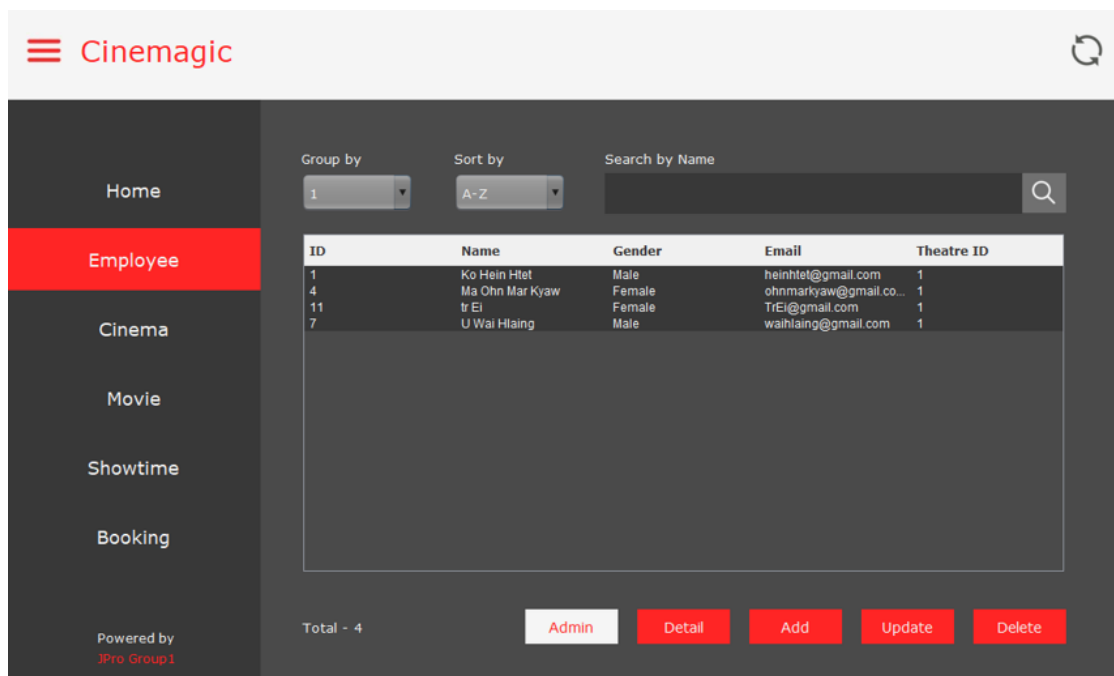
Figure 27: The result of grouping Employees' data by Theatre ID

The additional feature includes a prominently displayed "Search" bar at the top of the employee page. Admins can utilize this feature by entering employee names, to initiate a search. Subsequently, the system efficiently retrieves relevant results, aiding admins in identifying redundant data.
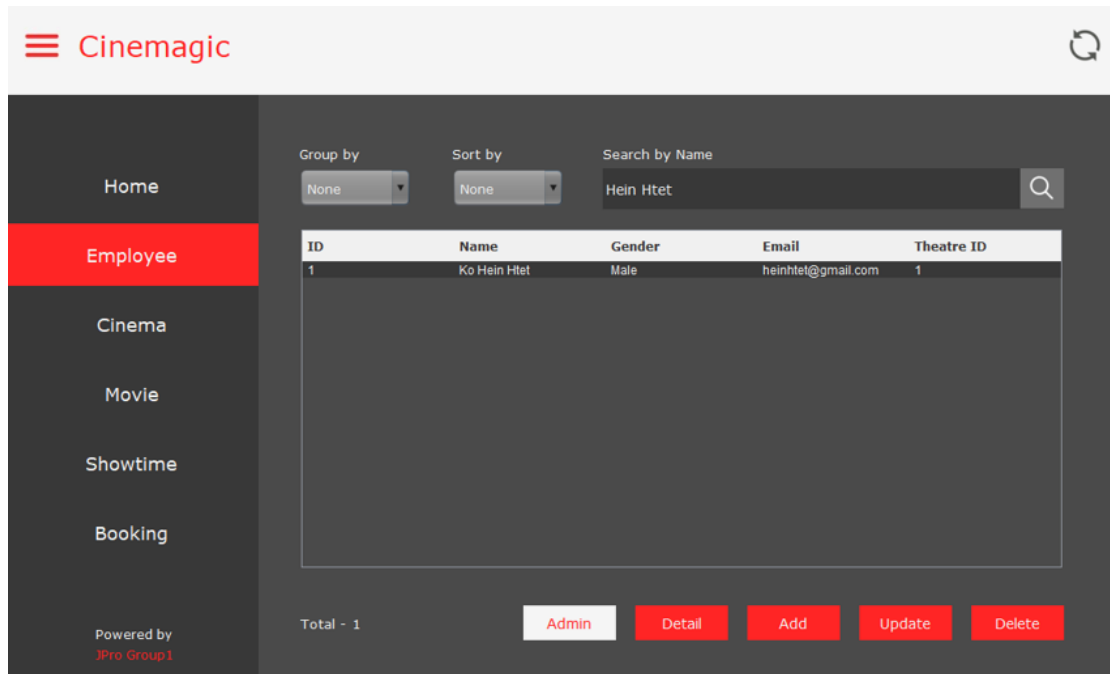
Figure 28: Search by Employee's Name

Under the table, the "Detail" button can display and view all the information of the selected row of employee within a new frame.
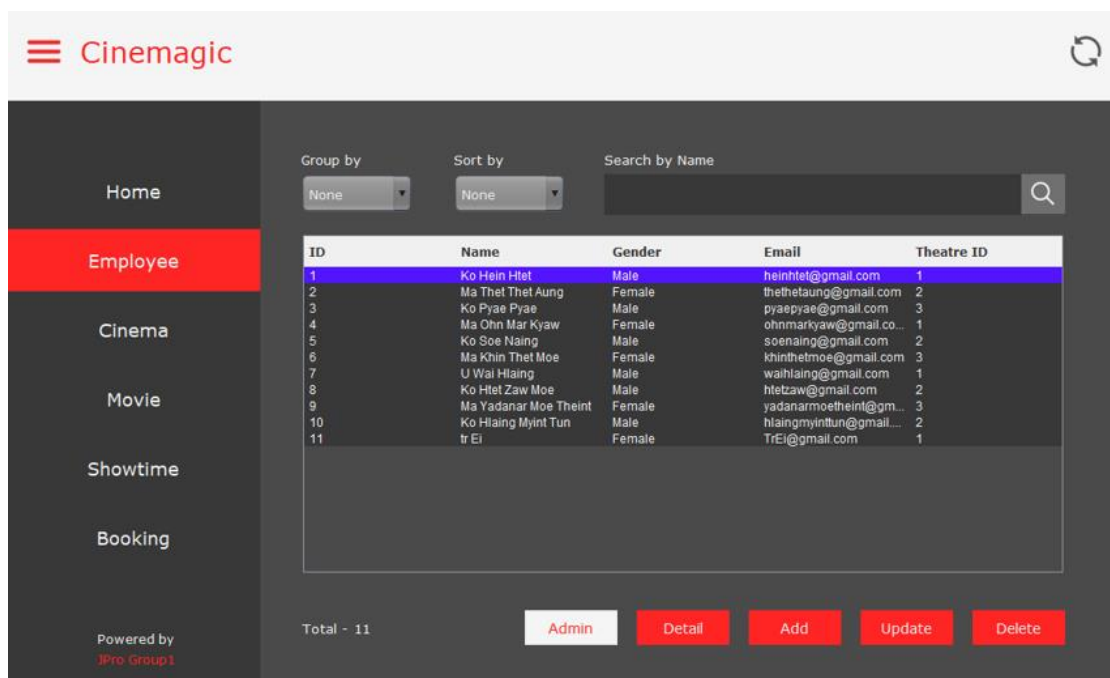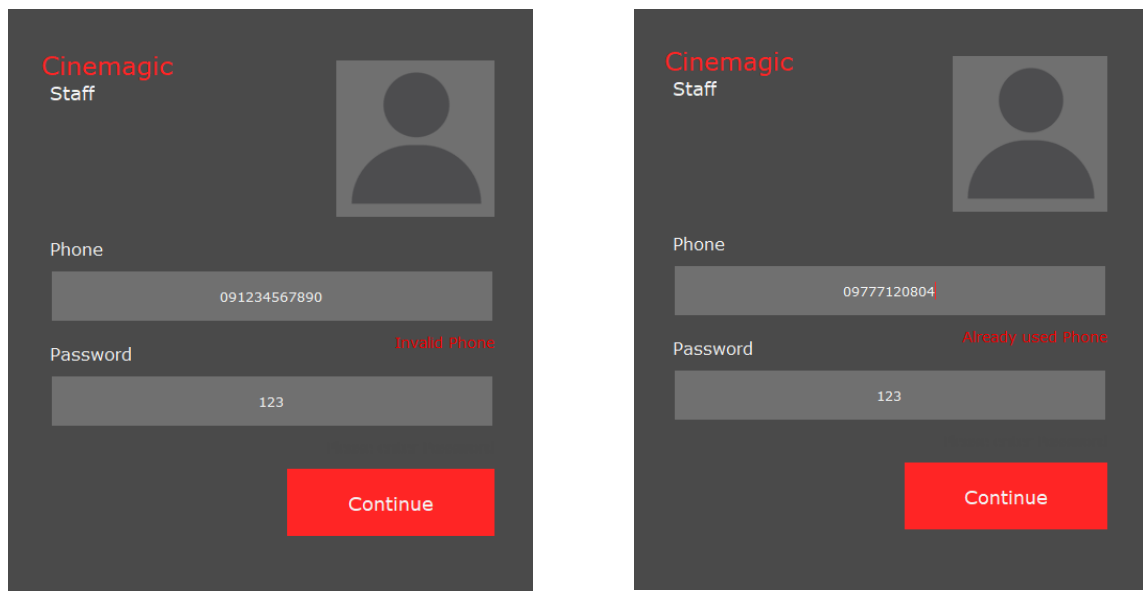
Figure 29: Selecting an Employee and Clicking the Detail Button

After clicking the detail button, a frame containing detailed information about the selected employee will appear, as depicted in Figure 30.

Figure 30: Detailed Information of Employee

To add a new staff member, the admin can access the "Add" button. Upon clicking it, a new frame will appear, allowing the admin to input all necessary details of the new staff. If any validation errors occur, such as leaving fields like phone number and password empty, the admin will be promptly notified. For instance, if the admin neglects to fill in required fields like phone number and password, they will receive validation errors. Additionally, the admin must ensure that staff information is entered in the correct format. For example, phone numbers should begin with '09' and contain a total of 11 digits; otherwise, the error "Invalid Phone" will appear. Furthermore, if the entered phone number has been previously used, the admin will be alerted to validation errors such as "Already Used Phone".

Figure 31: Staff's Phone Validation

Besides admin can easily and comprehensively add new staff photo at the near top of the frame as shown in Figure 32.
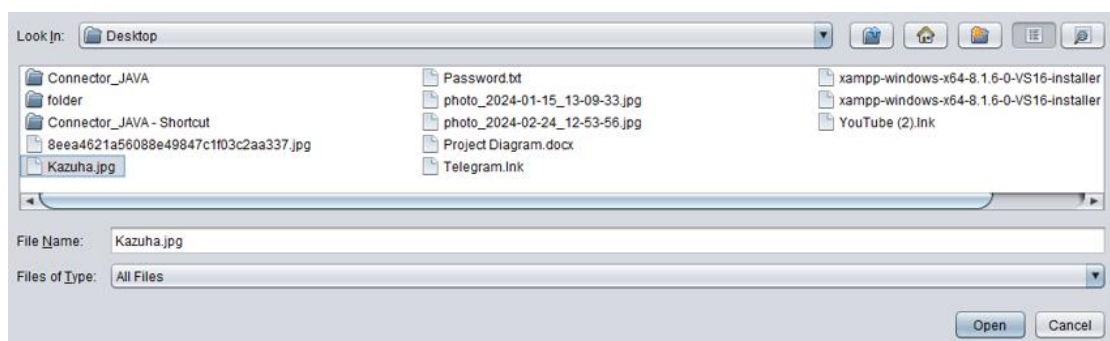
Figure 32: Add image by Admin

The added image of the staff will appear in the frame, as shown in Figure 33. Similarly to the previous frame, the admin must ensure precise and accurate completion of each description. If any errors are encountered, validation error messages will be displayed, as depicted in Figure 34. Make sure that staff name needs to include only characters. As well as date of birth needs to be around about 1900 and over 2000.
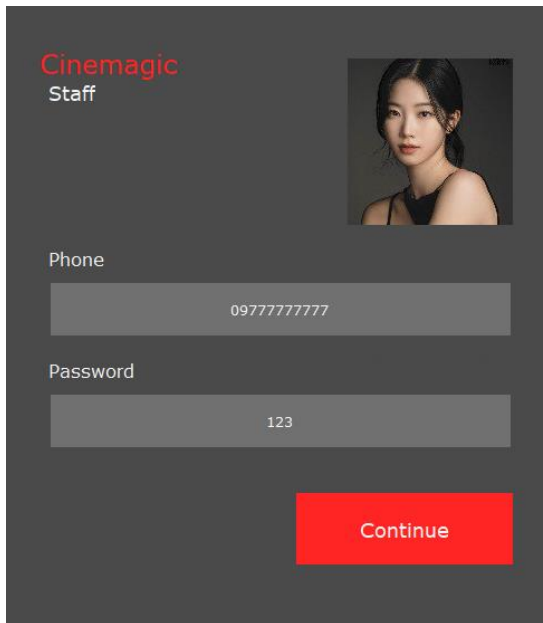
Figure 33: Staff Image Added
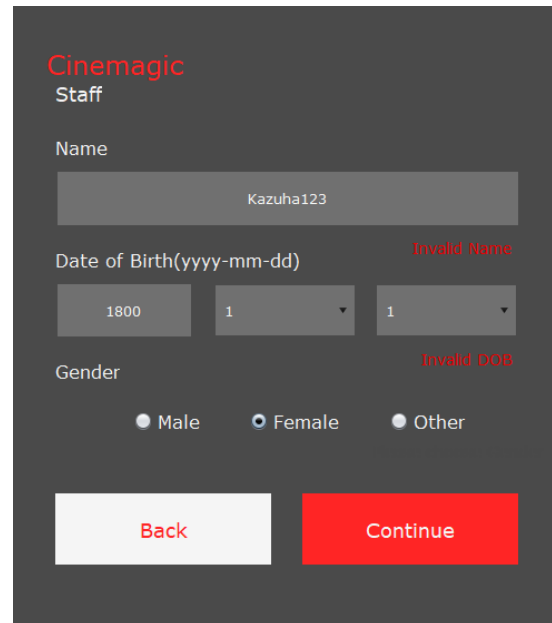
Figure 34: Validation Error Messages for Name and DOB

Clicking "Continue" will transition to the next frame, where the admin is required to provide more detailed information about a staff member. The NRC of staff need to start with a capital letter and include about 6 numbers exactly. Additionally, the date of employment should be around the year 2020, and the email should be entered according to the standard email format.

Figure 35: Validation Error Messages

for NRC and Email

Figure 36: Staff Add Success

After all, admin fills in all the required data in the form for a new staff, and once completed, press the "Save" button to save the data. When there is no "Input Missing Error", following the save action, the data will be successfully saved and added to the system, as shown in Figure 36.

When the admin clicks "Update" button near the bottom, the admin will see Staff's old profile page as shown in Figure 37. Admin can update all of Staff information just like the same functions in above.
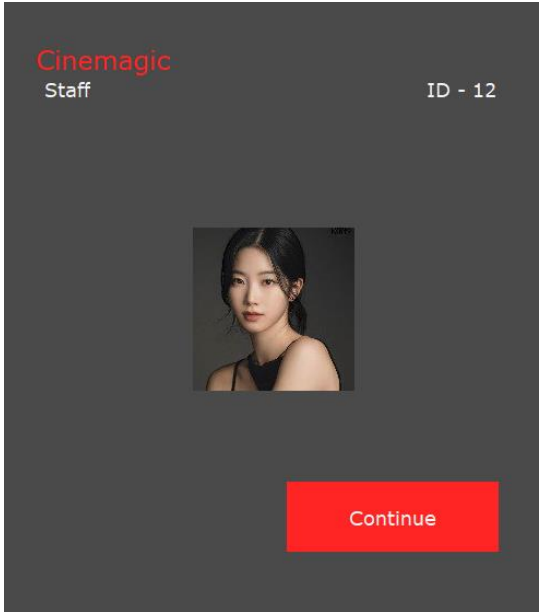
Figure 37: Staff Update Frame   Figure 38: Staff Update Success
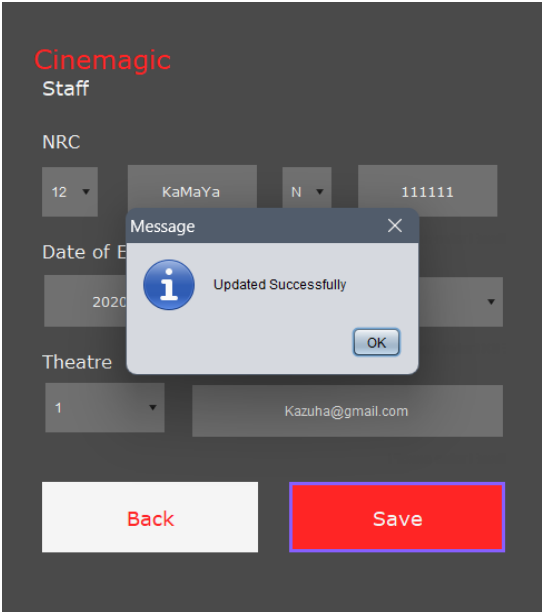
The administrator inputs all necessary data into the form for a staff member to update. After completing the form, the administrator clicks the "Save" button to initiate the update process. Upon verifying that there are no "Input Missing Errors" the system successfully saves and updates the data.
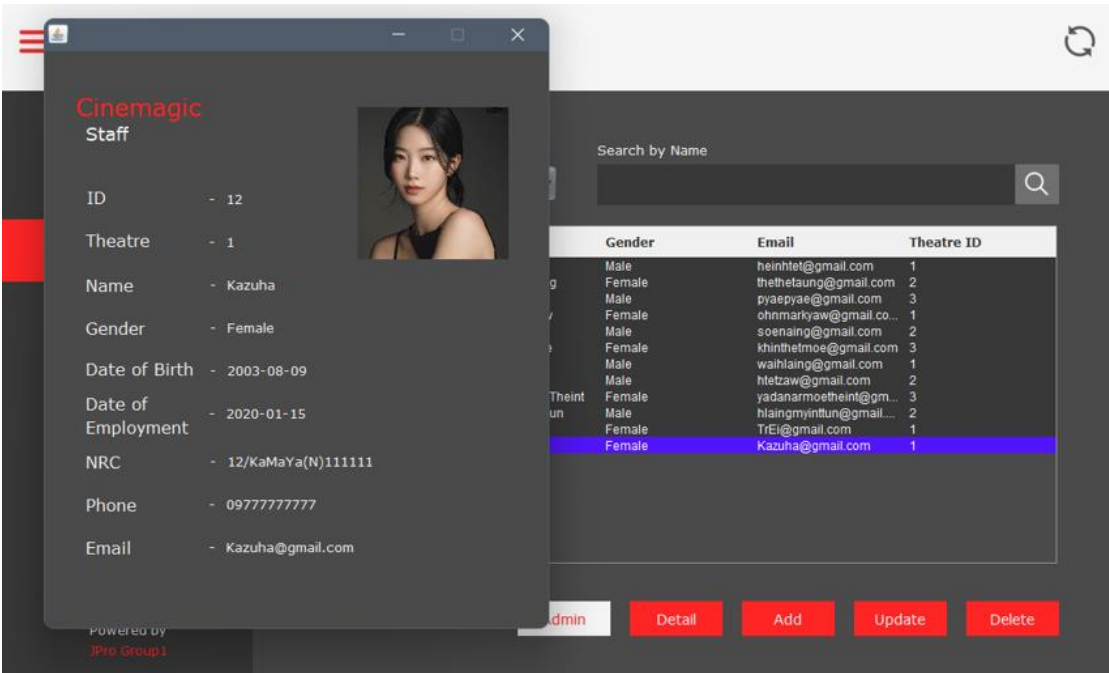
Figure 39: Result of Staff Information Update

Administrators can delete staff information by selecting a row and clicking "Delete" (Figure 40), with a confirmation prompt for accuracy. Once confirmed, the data will be permanently removed and inaccessible.
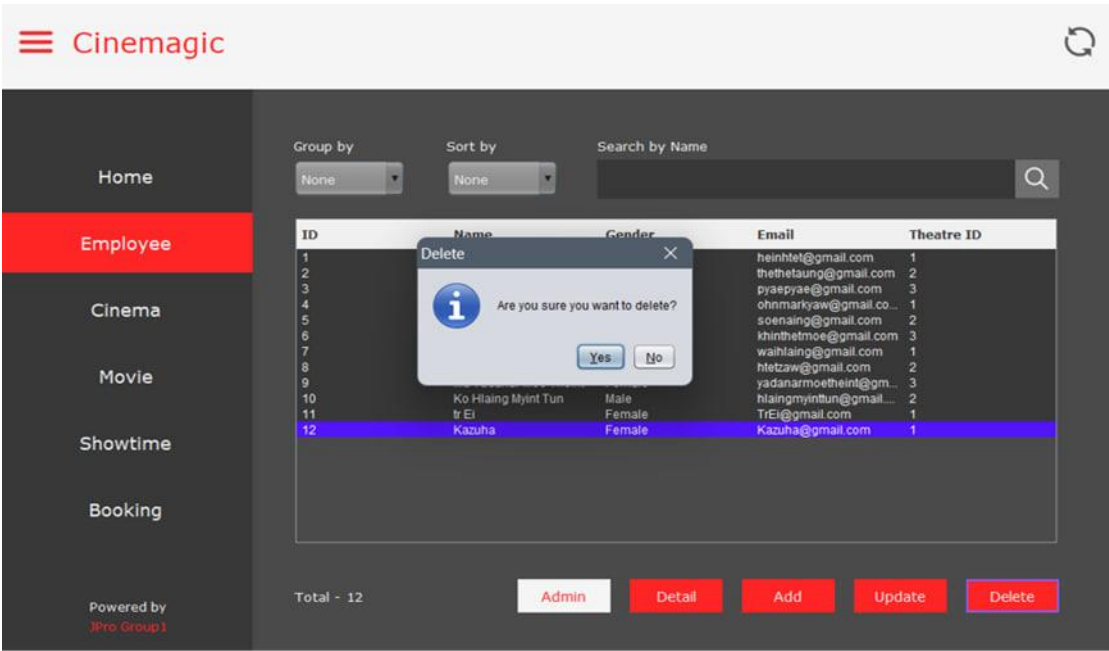
Figure 40: Staff Information Delete Confirmation

Clicking the "Admin" button next to the Detail button takes the admin to the "Admin" page (Figure 41). Here, they can manage administrator information stored in the database, along with familiar functions like Detail, Add, Update, and Delete buttons.
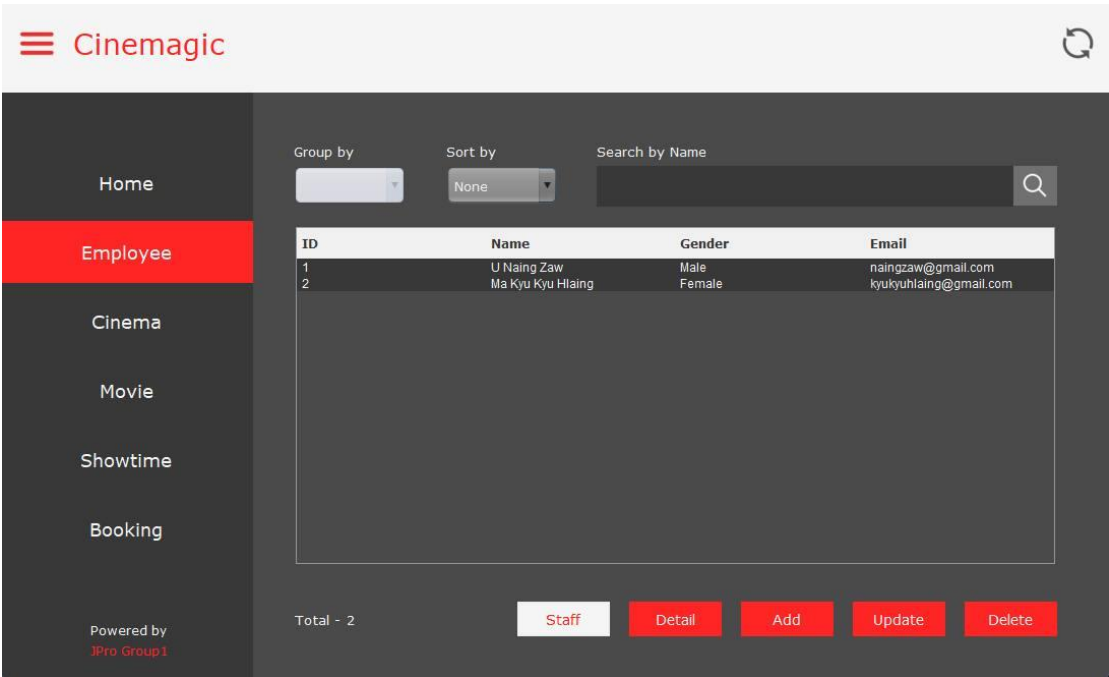
Figure 41: Admin Dashboard's Admin Panel

When the admin clicks "Cinema" tab from the navigation bar, the admin will see Cinema page as shown in Figure 42. Our Cinema has about 3 theatres associated with seats and seats are available or not. At the top of the panel, admin clicks to search by address and use sort by name.
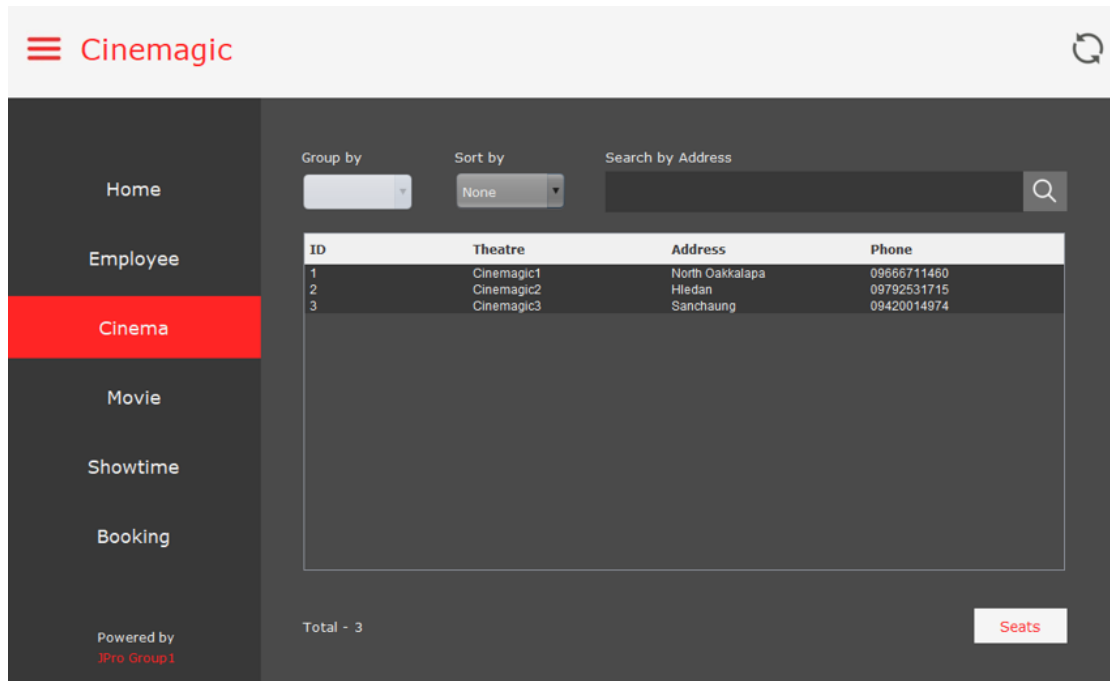
Figure 42: Admin Dashboard's Cinema Panel

When the admin clicks "Seats" button near the bottom, the admin will see Cinema's seats as shown in Figure 43.
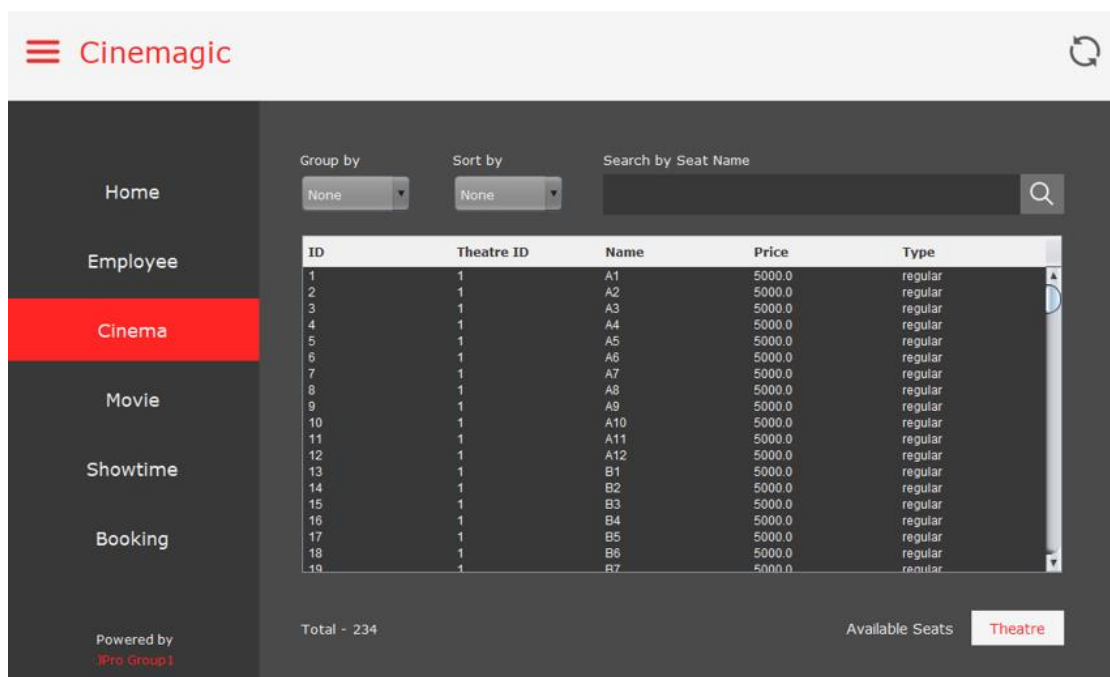
Figure 43: Seats View

Seats can be grouped by Seat Types, such as Regular, Premium and Couple and also sorted by Price (High-Low/Low-High) and A to Z, Z to A, as shown in Figure 44 and 45.
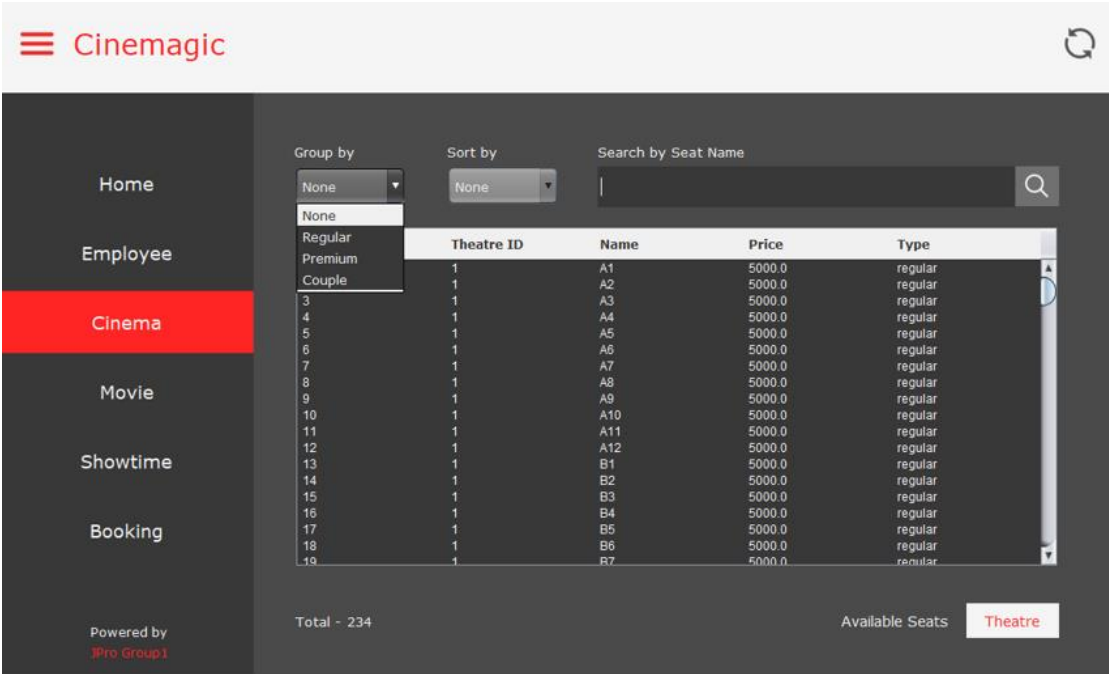
Figure 44: Group by View of Seats
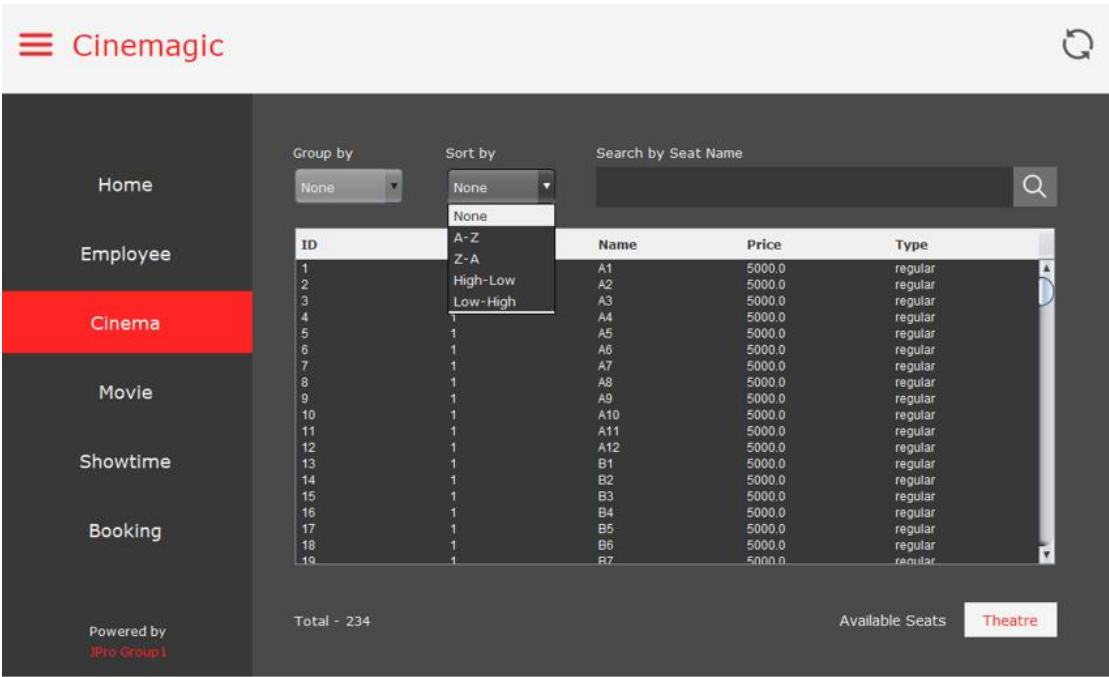
Figure 45: Sorted by View of Seats

Additionally, the admin can search for seats by seat name, such as 'G6' and others, as illustrated in Figure 46.
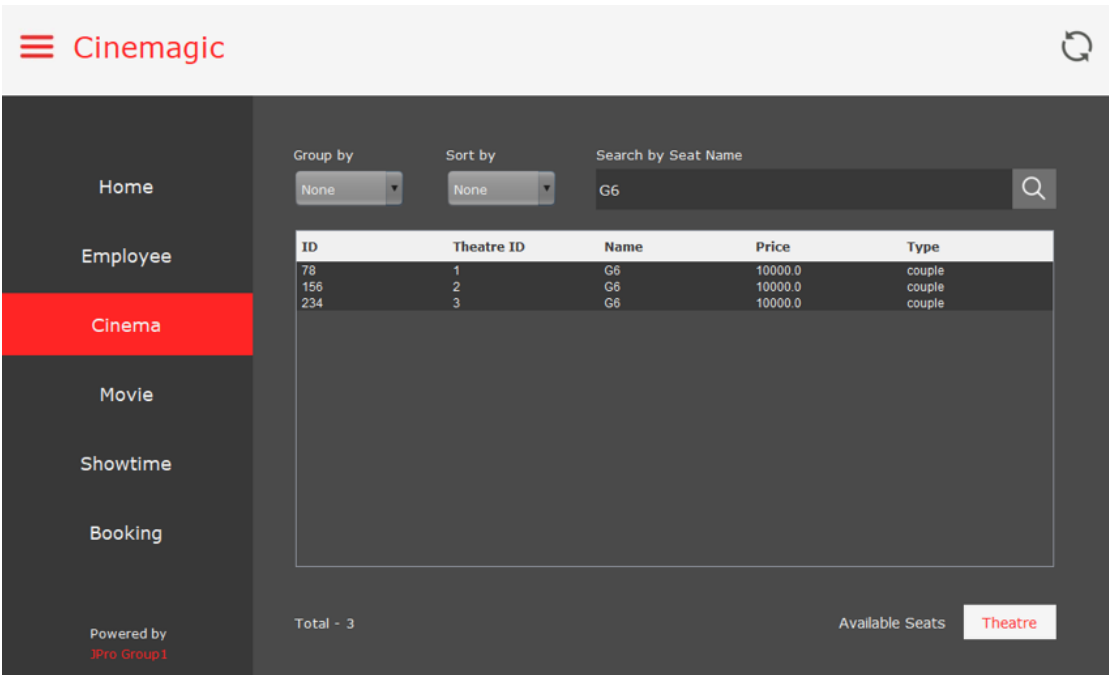
Figure 46: Search Seat Data by Seat Name

When the admin clicks "Seat Available" button near the bottom, the admin will see Cinema's all available seats described with TRUE or FALSE as shown in Figure 47.
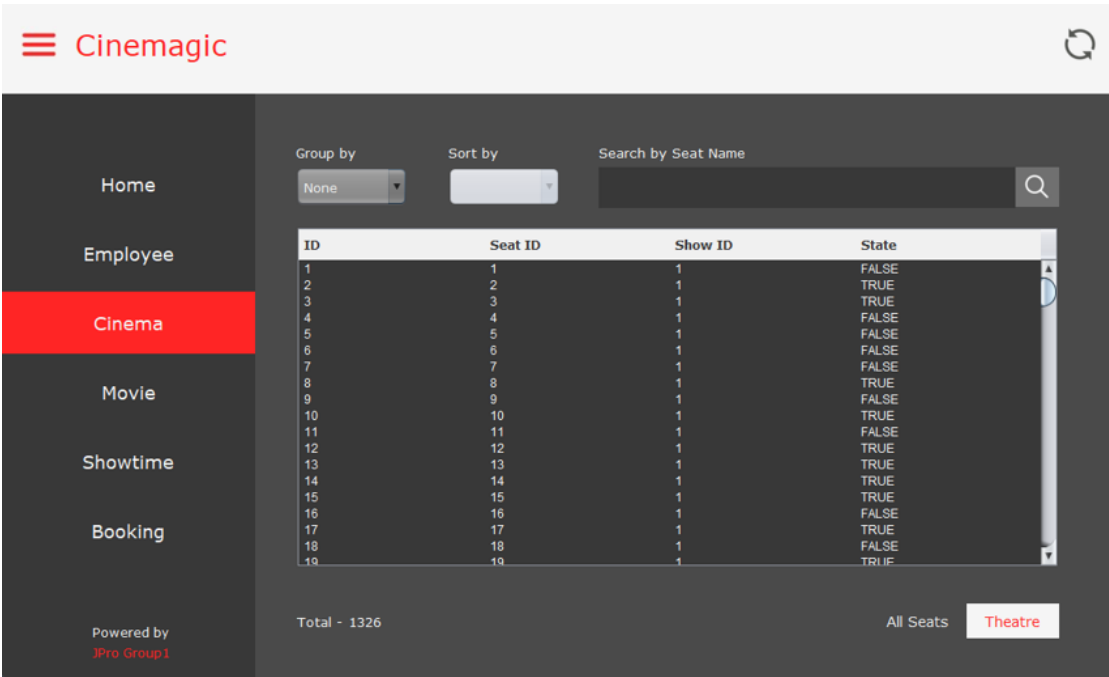
Figure 47: Seats Available View

When the admin needs to view the available list of seats or those that are sold, they can utilize grouping by 'Available' or 'Sold,' as demonstrated in Figure 48.
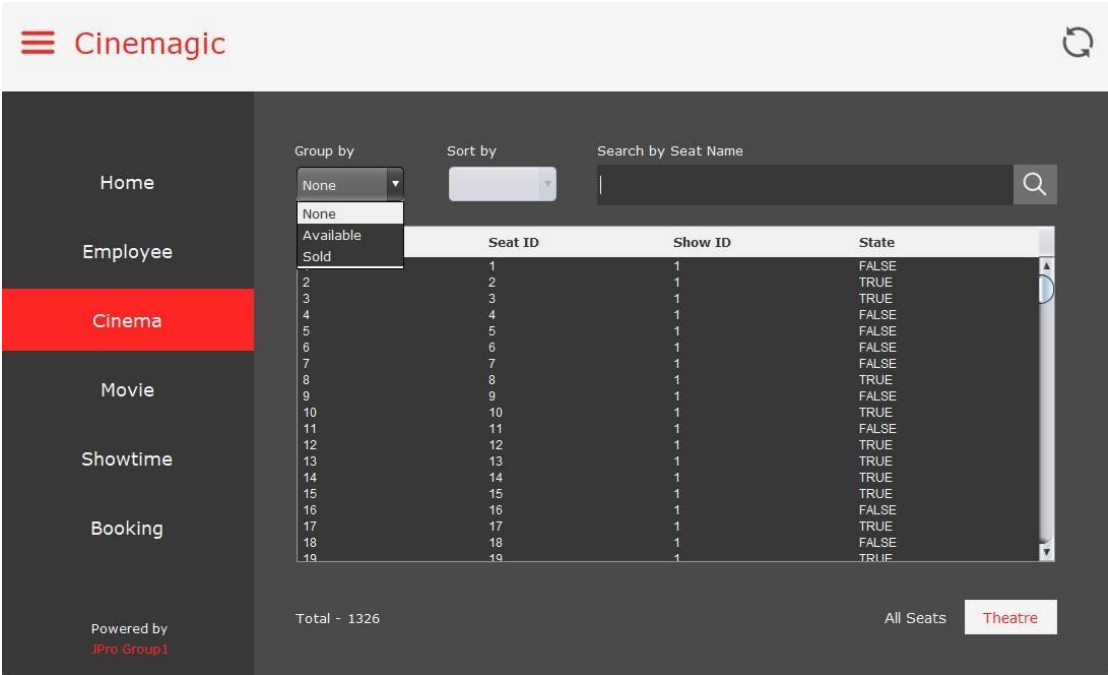
Figure 48: Group by View of Seat Available

When the admin accesses the "Movie" tab, they're directed to the "Movie" panel, as shown in Figure 49, showing a table with movie information from the database. This enables easy access and management of movie data.
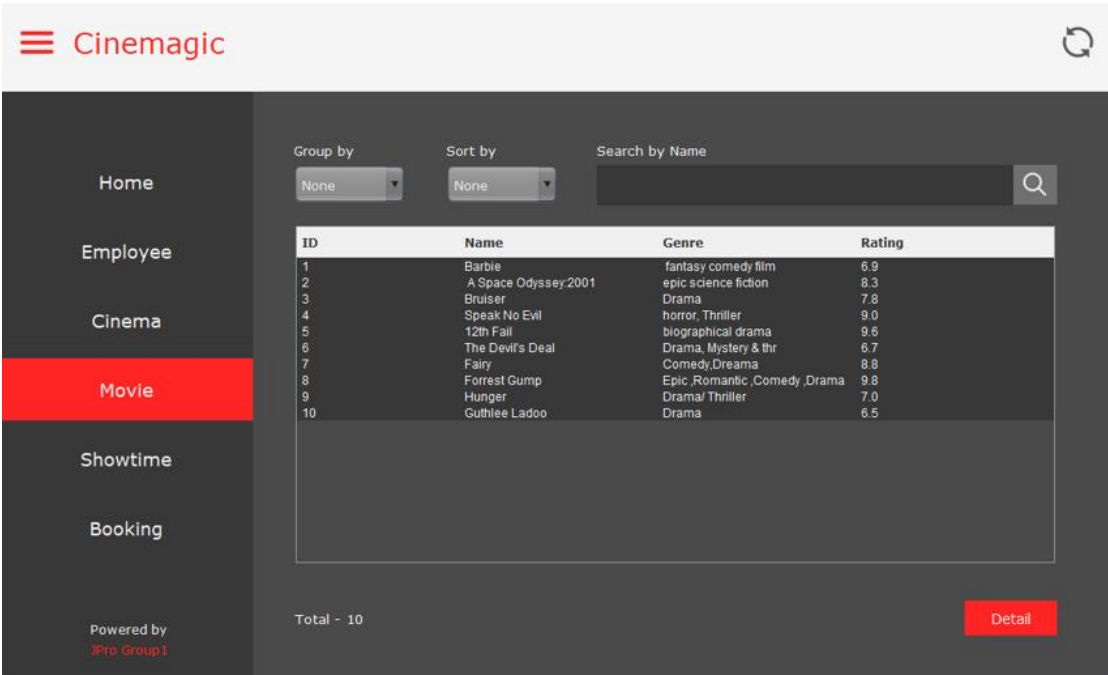
Figure 49: Admin Dashboard's Movie Panel

When Movie data can be grouped by their ratings, such as within the ranges of 0.0 to 2.0, 2.0 to 4.0, and so forth. Figure 50 illustrates this process.
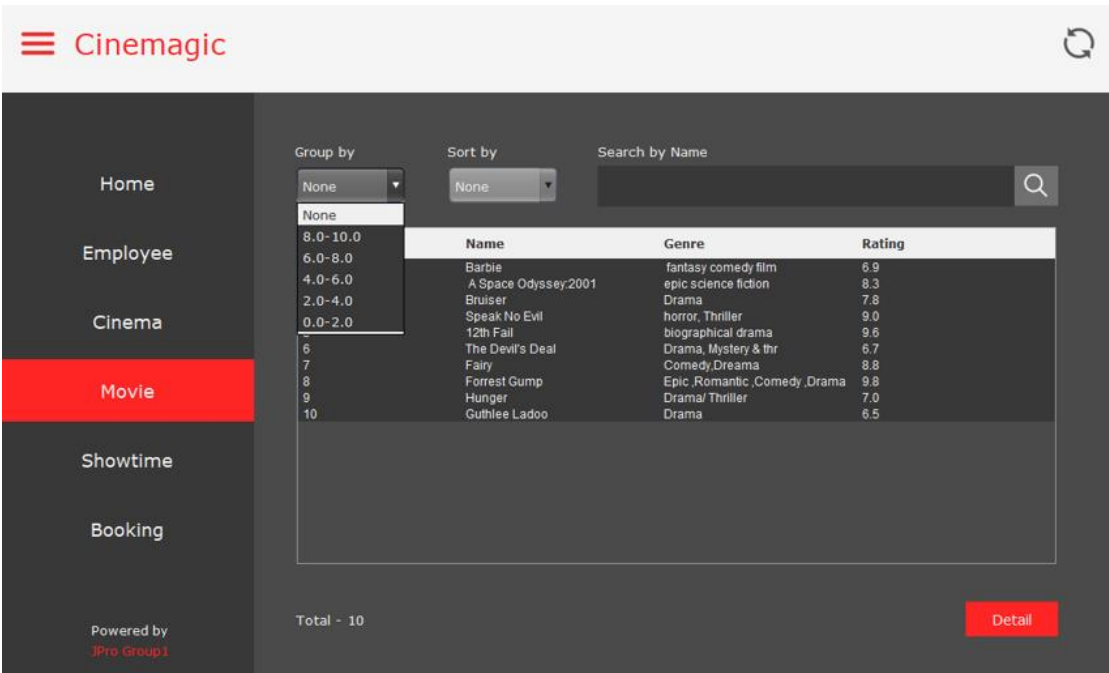
Figure 50: Group by View of Movie

Figure 51 showcases the movie data grouped within the rating range of 8.0 to 10.0.
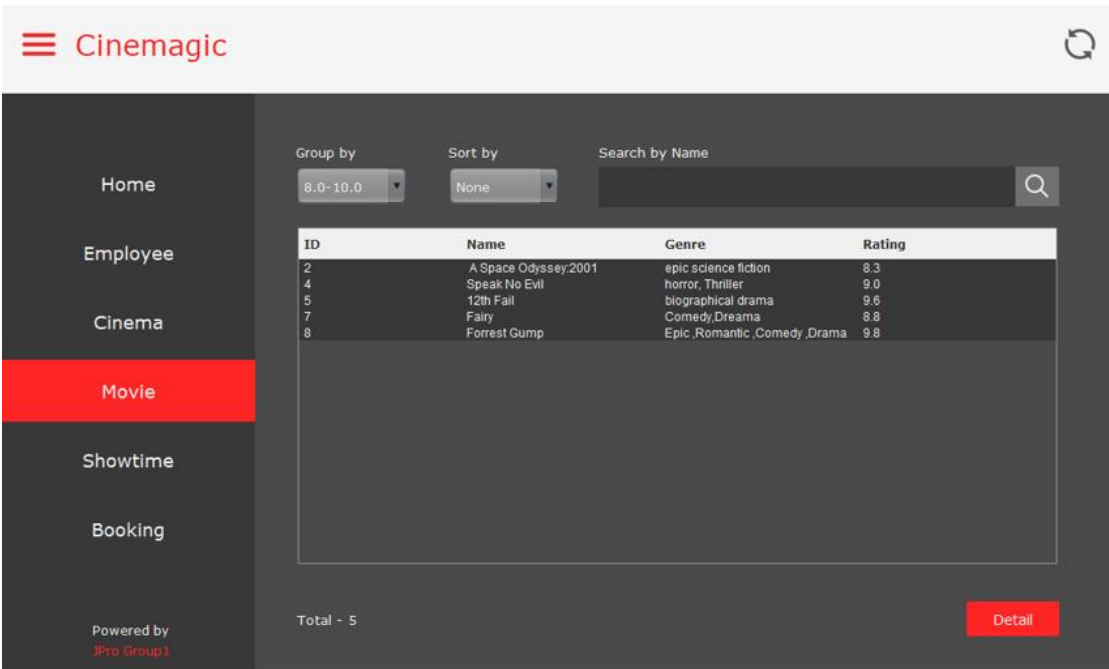
Figure 51: Group by View of Movie Within the Rating Range of 8.0 to 10.0

Movie information can be retrieved by entering the movie name into the search bar, as shown in the Figure 52.
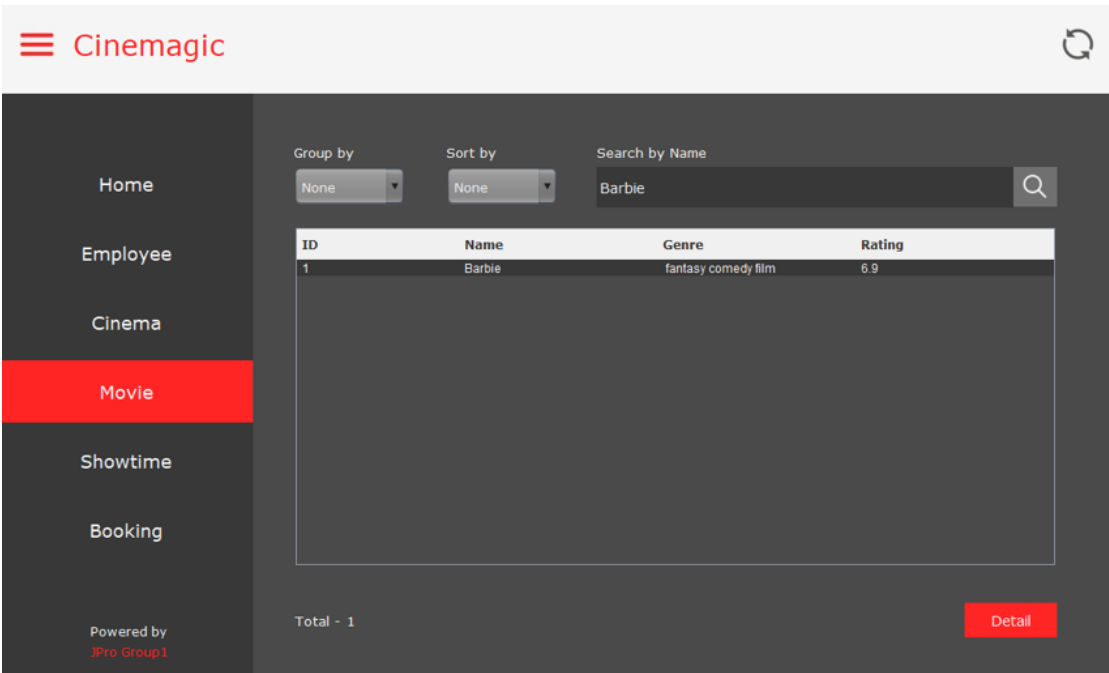
Figure 52: Search Movie Data by Movie Name

A "Detail" button located at the bottom right of the movie frame functions to display comprehensive information about the selected movie, including duration, cast, director, and movie poster, as depicted in Figure 53.
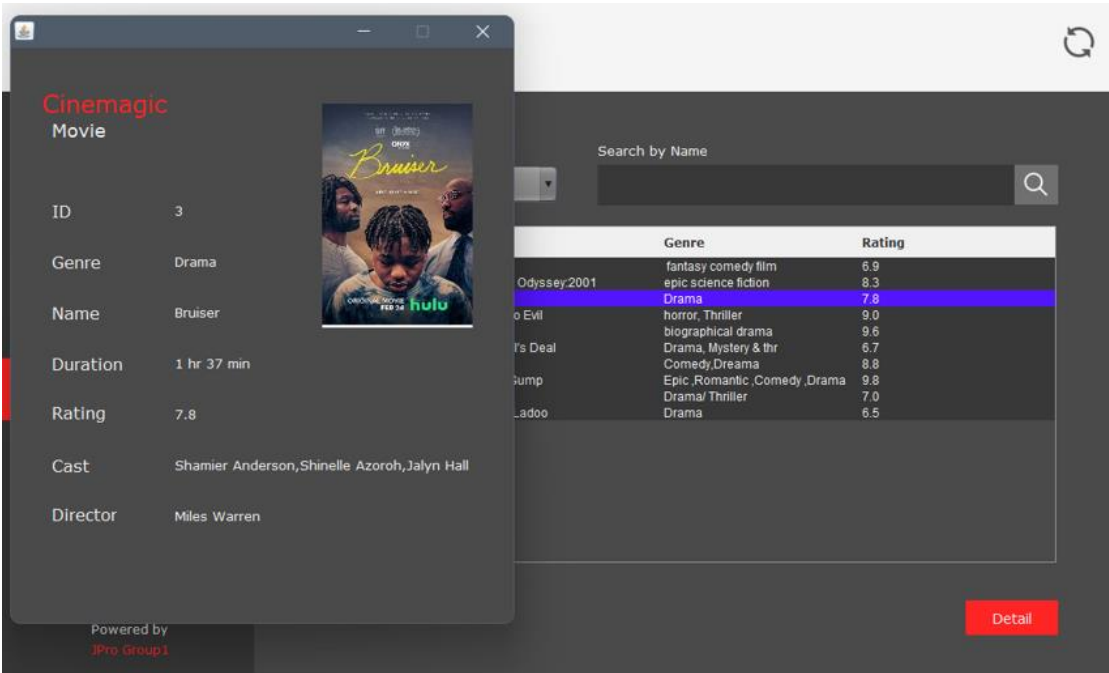
Figure 53: Movie Detailed Information

Upon clicking the "Showtime" tab, the frame containing the showtime table will be displayed, as depicted in Figure 54.

Figure 54: Admin Dashboard's Showtime Panel

The admin can utilize the group by function to filter and easily view showtime information. This function categorizes showtimes into AM and PM for clearer organization and accessibility.

Figure 55: Group by View of Showtime

Figure 56 visually demonstrates the process of categorizing showtimes into the AM period.

Figure 56: Group by View of Showtime by AM Period

The administrator can conveniently search for showtime information by entering the movie name. In Figure 57, when the admin types "Barbie" into the search bar, it retrieves all the corresponding data for that movie.

Figure 57: Search Showtime Information by Movie Name

Upon selecting the "Booking" tab, the frame displaying the booking table will be presented, as shown in Figure 58.
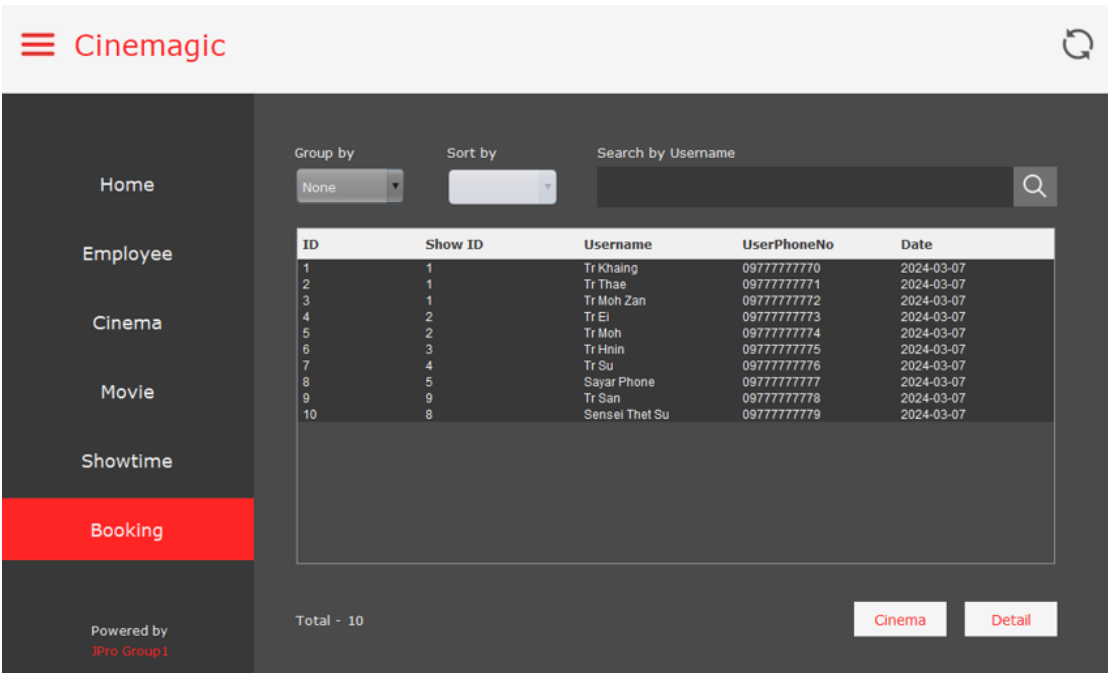
Figure 58: Admin Dashboard's Booking Panel

Admins can group booking information by Show ID to facilitate the management of showtime data more effectively.
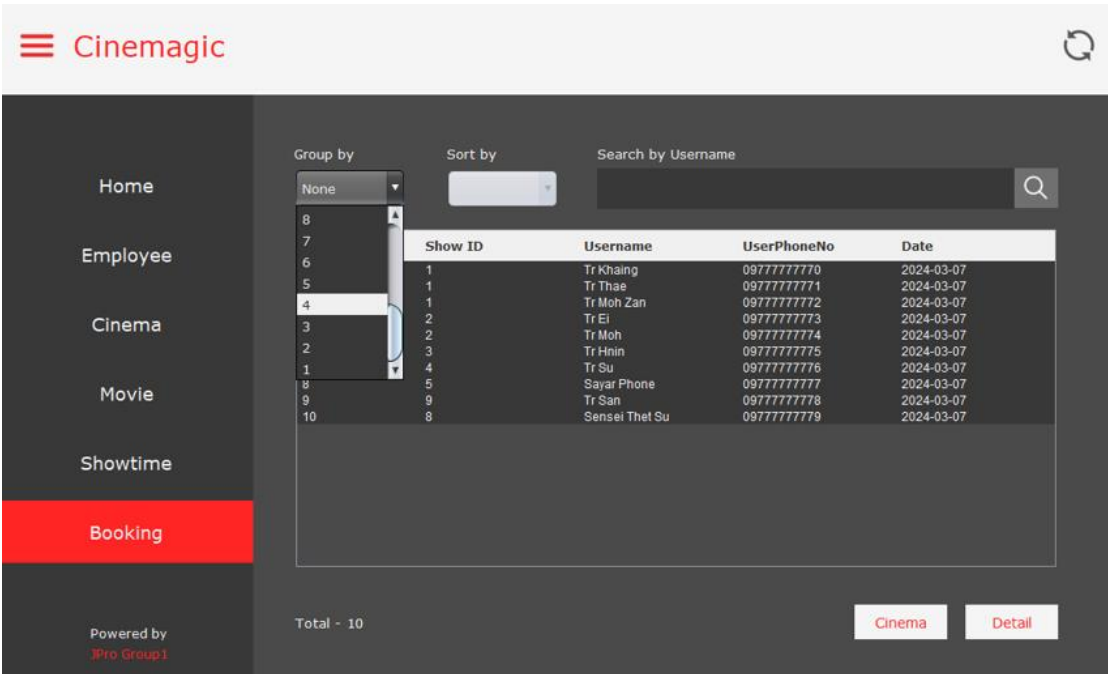
Figure 59: Group by View of Booking

Staff Dashboard UI

In the staff sign in frame, the validation process mirrors that of the admin. Both administrators and staff members must input the correct combination of phone number and password. Failure to do so will result in an error message indicating incorrect input. Figure 60 illustrates the correct input required to sign in as staff into the Cinemagic Ticket Reservation System.
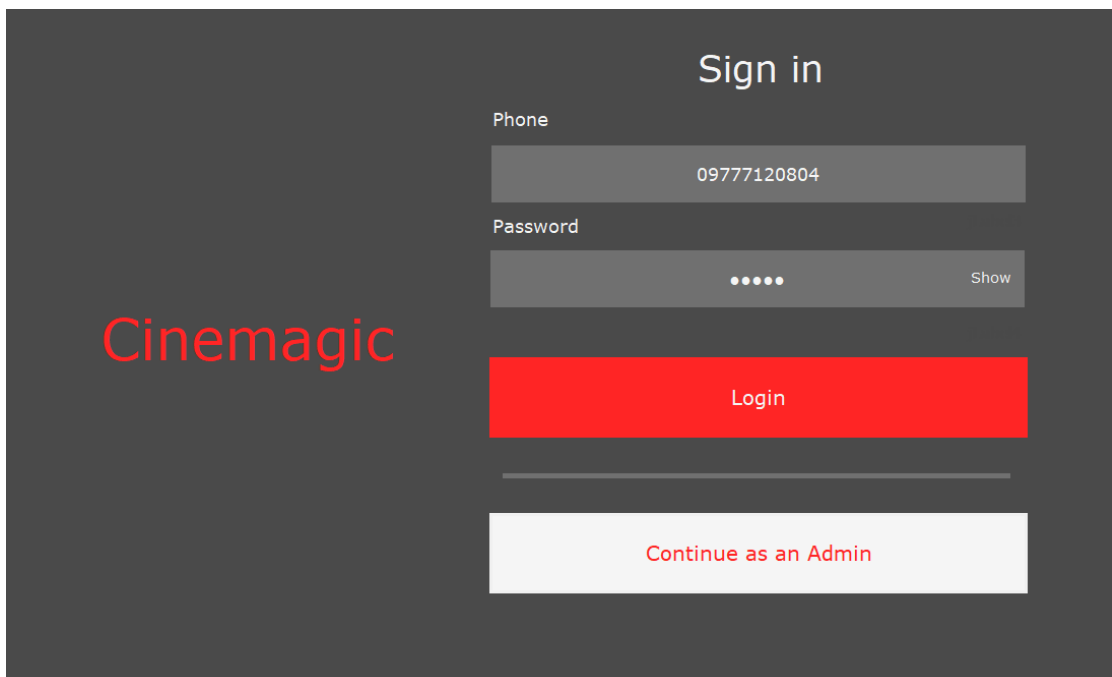
Figure 60: Staff Sign In

Upon successful sign in, the Staff main frame will be displayed, as shown in Figure 61. Notably, while the Admin main features an "Employee" section in the side navigation bar for managing staff members, the Staff main does not include this section. Moreover, in the Staff main interface, the count of staff members remains hidden, reflecting the limited access privileges of staff members.
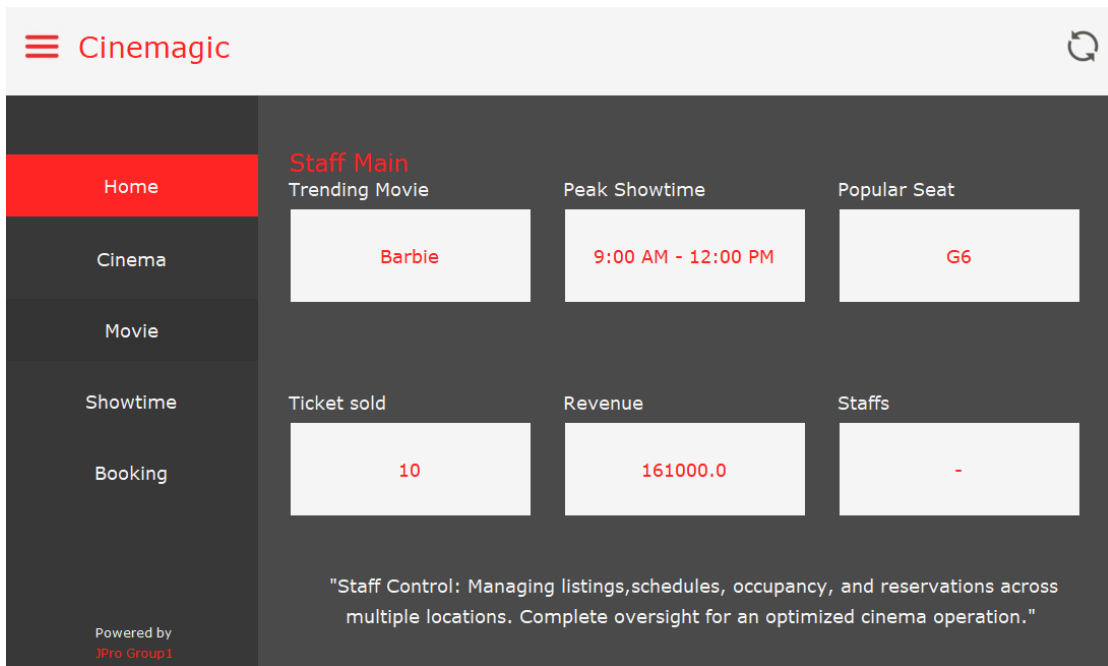
Figure 61: Staff Home Page

The Movie section in the Staff interface differs significantly from that of the Admin interface. Staff members possess the authority to Add, Update, and Delete movies. However, the remaining elements within this section function identically to those in the Admin Movie interface.
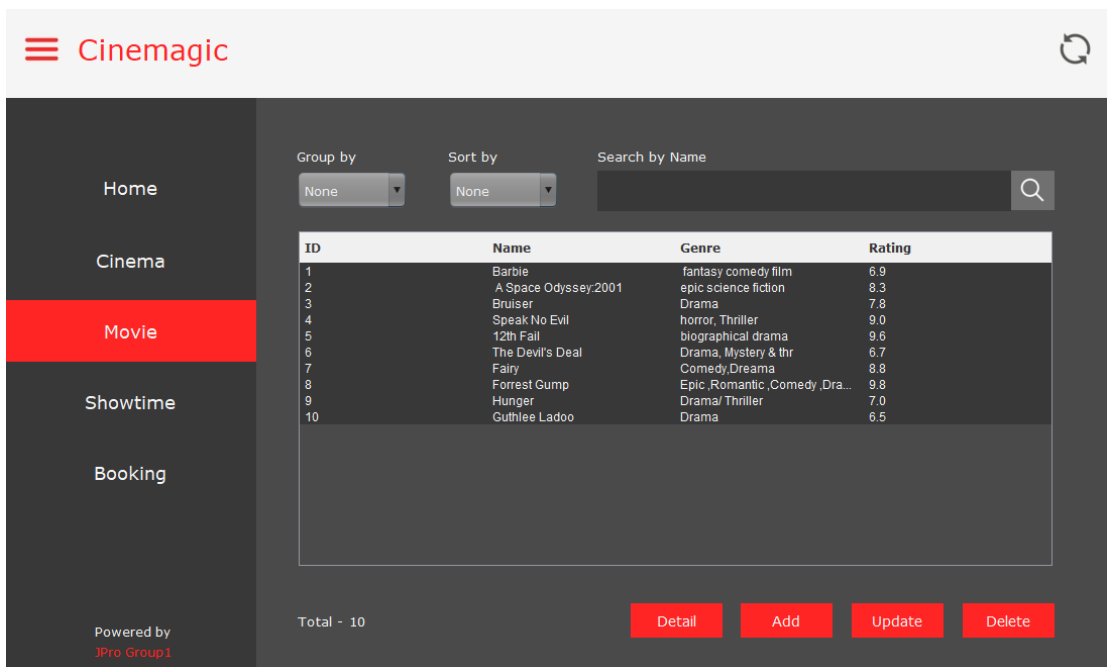
Figure 62: Staff Dashboard's Movie Panel

To add a new movie, click the "Add" button to prompt a new frame. If any text fields are left empty, error messages ("Please enter Name", "Please enter Genre", "Please enter Duration") will indicate the missing information like the previous frames. The Duration field must adhere to the format "1-3 hr 0-59 min"; otherwise, an "Invalid Duration" message will display below it. Once all conditions are satisfied, proceed to the next page by clicking the "Continue" button. A text field accommodating multiple genres is utilized for the purpose of insertion.

Figure 63: Movie Add Validation

For the next frame in Figure 64, the name of the Director and Casts are not validated and rating field is valid only if the inputs are in the range of 0 and 10 inclusively.
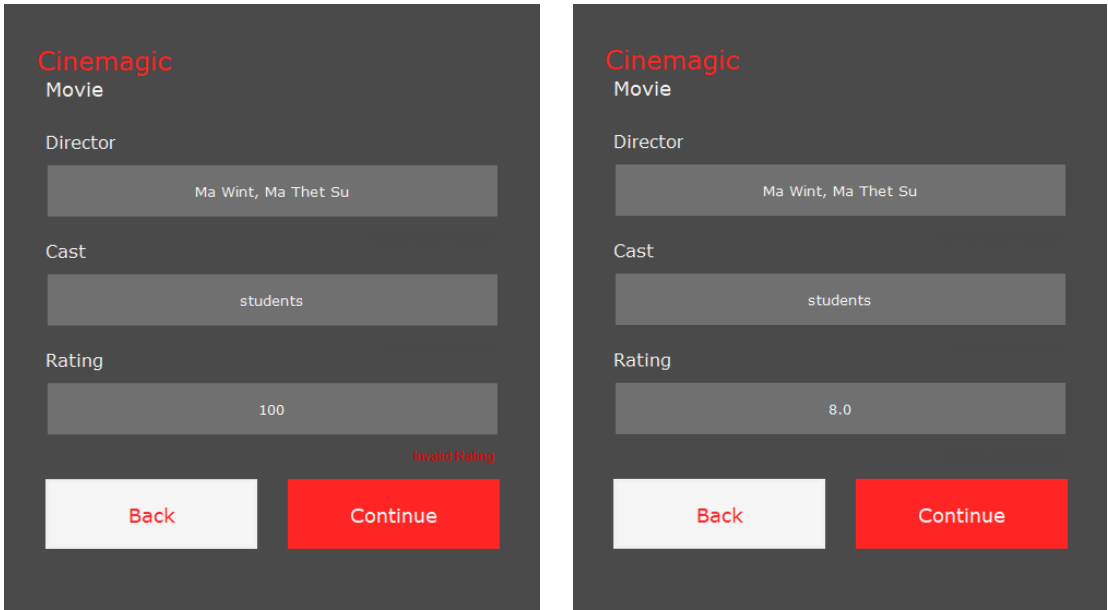
Figure 64: Movie Add Validation

The following frame provides the staff with the option to insert a photo of the movie. If no photo is selected, then null will be inserted into the database, similar to the previous functionality of adding staff and admin.
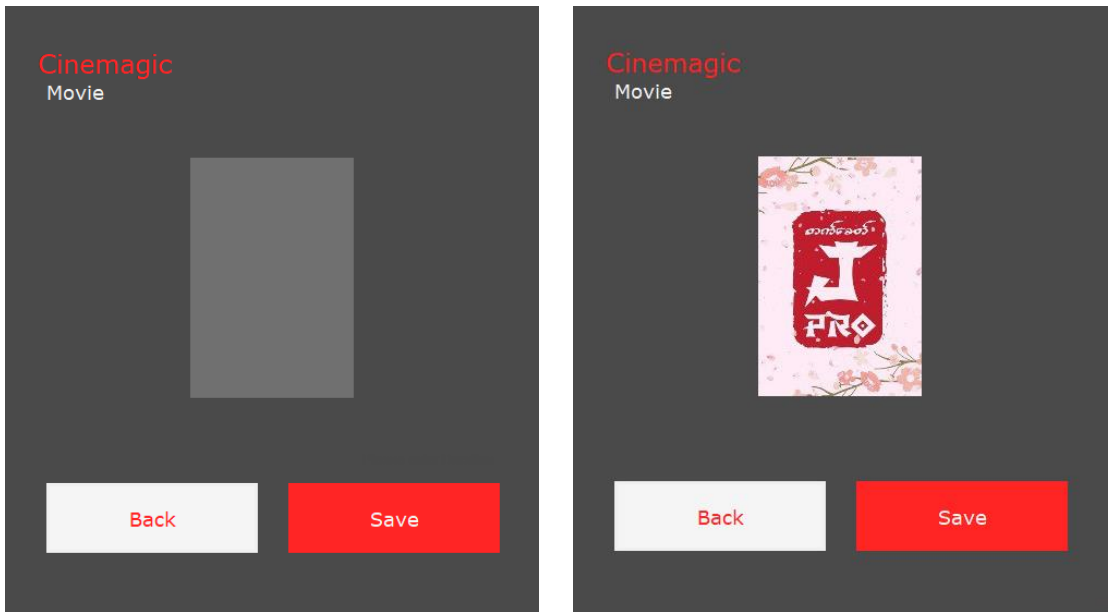
Figure 65: Add Movie Photo and Success

After successfully inserting the frame and clicking on the refresh button located in the right corner of the Movie frame, the newly added movie will appear in the table with all necessary data displayed. If further detail information is required, the same "Detail" button, similar to the one in the admin interface, provides the necessary functionality.
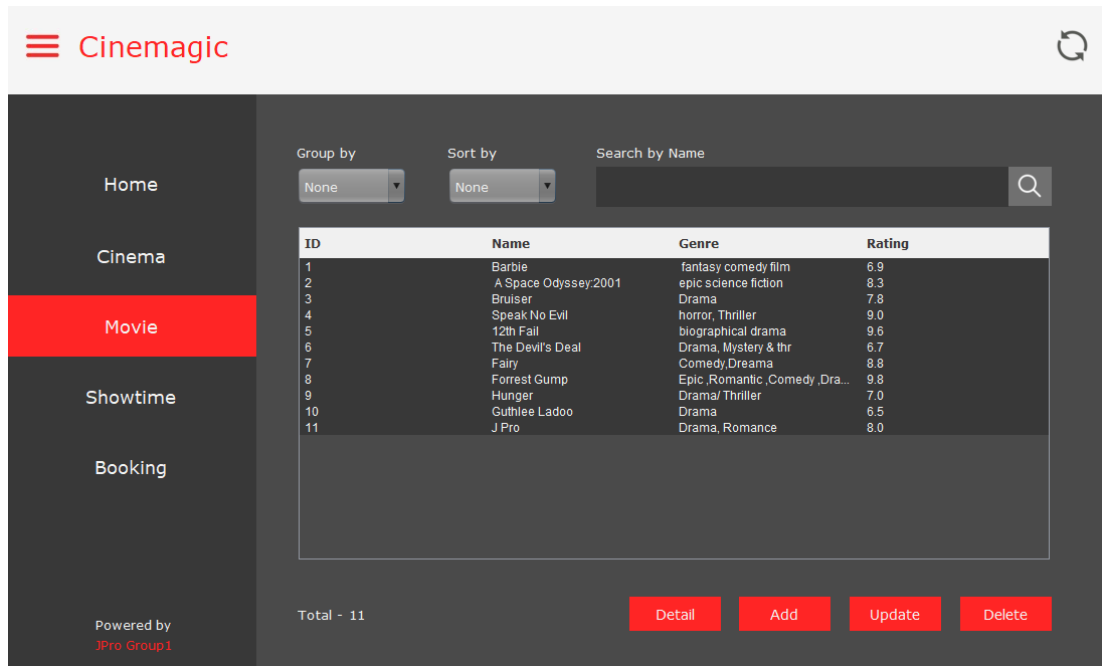
Figure 66: Movie Frame after insertion

The "Delete" and "Update" buttons work similarly to those in the staff and admin frames of the admin dashboard. Clicking "Update" opens a Movie Update frame with pre-filled information, including the movie ID displayed in the top right corner. After making corrections and hitting update, a message confirms the successful update, and the table reflects the changes.
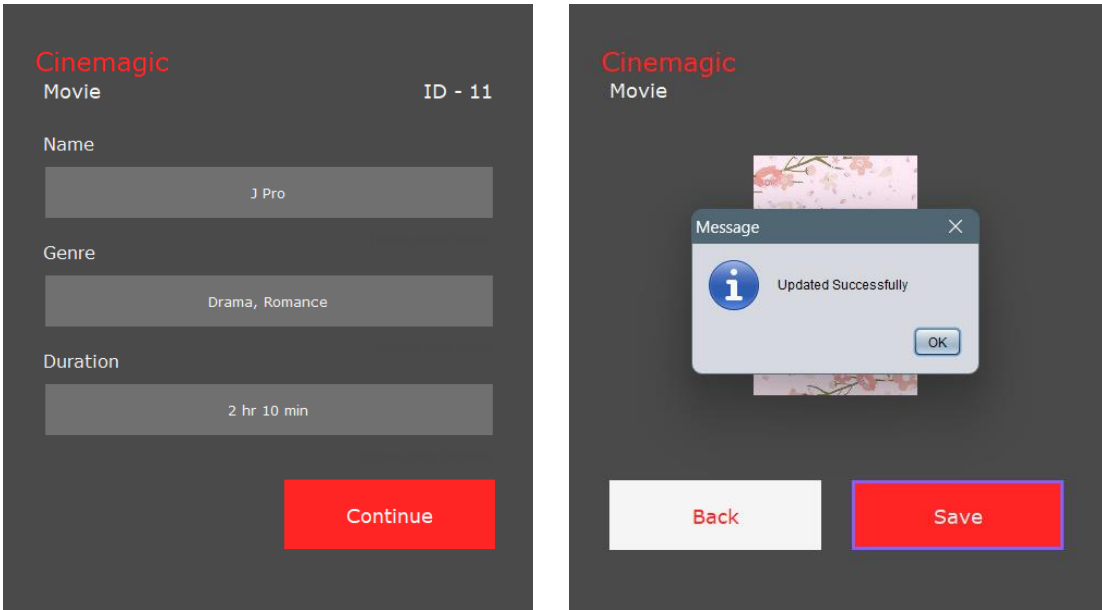
Figure 67: Movie Add Validation and Success

For the "Delete" button, both single and multiple selections of data will work properly. Multiple selected rows will be deleted all at once after selecting the specific rows that need to be deleted.
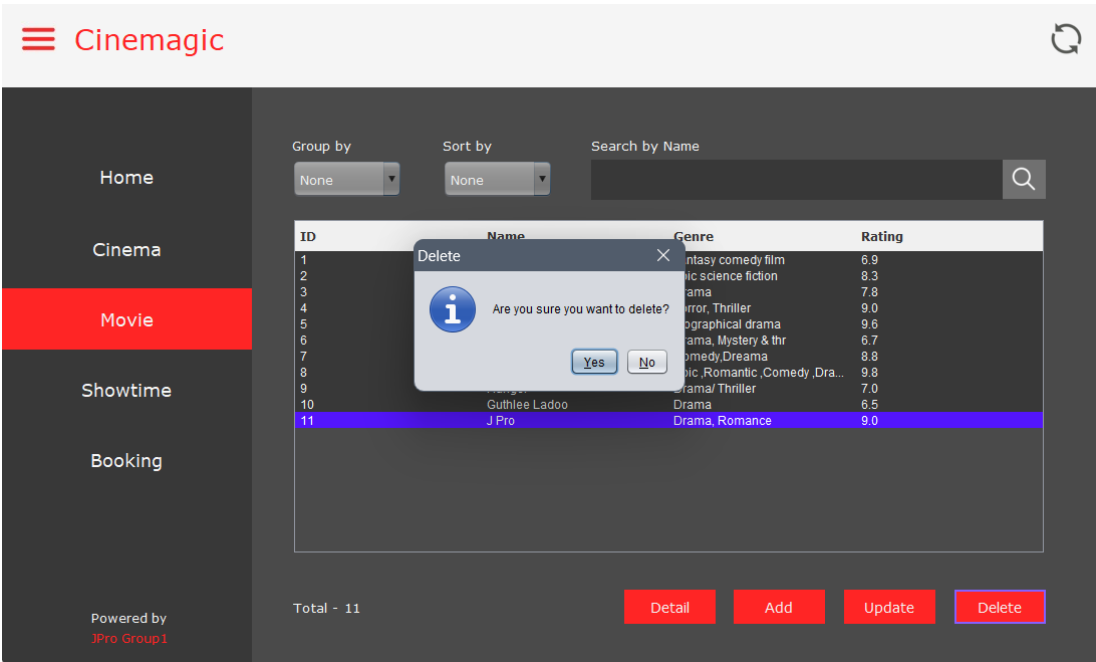
Figure 68: Movie Information Delete Confirmation

Before deleting the data, a confirmation message will be displayed to double-check any unintentional incidents. Upon confirmation, the data will be permanently deleted, followed by a message displaying "Deleted Successfully".
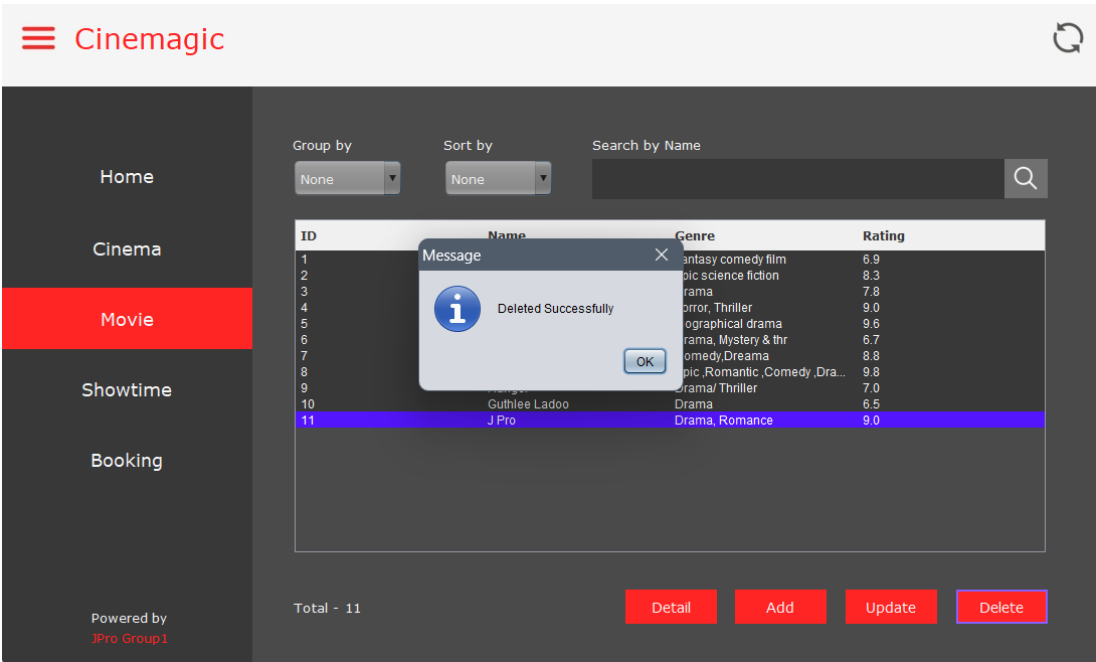
Figure 69: Movie Information Deleted Successfully

If the movie to be deleted is used as a showtime in the showtime table, the system will prevent the user from deleting it. Instead, a message will appear stating, "This data is in used and cannot be deleted", maintaining the system's flow and ensuring logic correctness and stability.
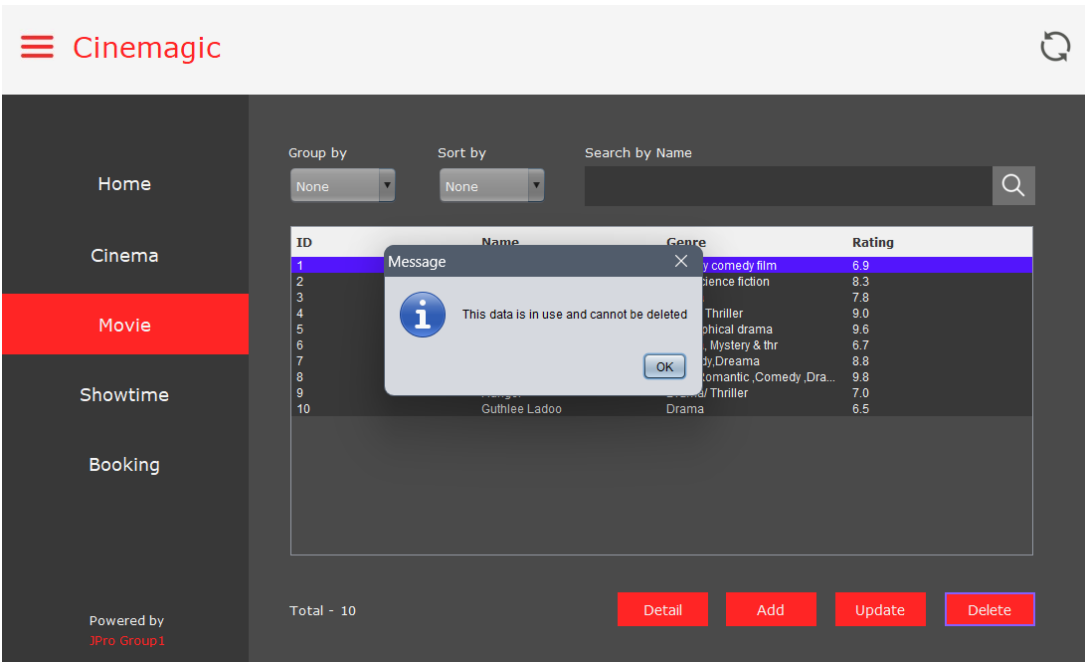
Figure 70: Movie Delete Limitation

Cinemagic Ticket Reservation System

In the showtime frame, staff members will have the ability to manage showtimes using the Add, Update, and Delete buttons. Clicking the Add button will create a Showtime Add frame similar to the others. The Update and Delete buttons will function identically to those in the previous Movie frame.
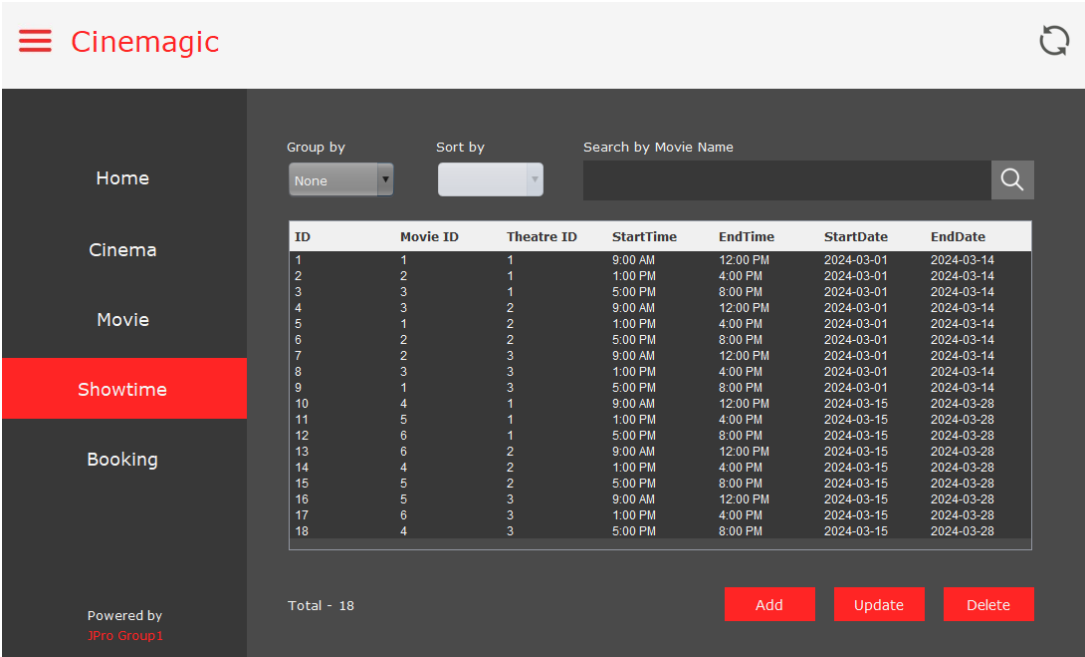
Figure 71: Staff Dashboard's Showtime Panel

In Showtime Add frame, the user will be able to choose the theatre, the movie from the movie table descending shown in the combo box. There are three options in the showtime combo box according to the cinema's policy. And there are also a few validations entering the Start and End date of the showtime.
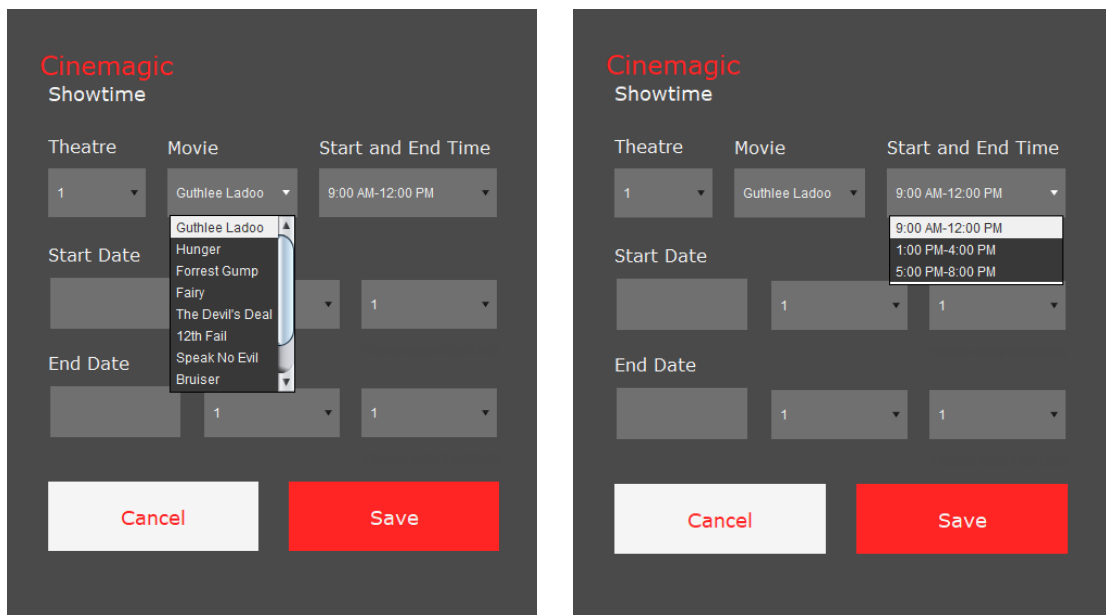
Figure 72: Showtime Add Combo Boxes

The start and end times of the showtime must be today or later, as past dates would be irrelevant in the cinema reservation system. Additionally, the end date must be later than the start date to maintain logical system flow. After successful insertion a message will be displayed.

Figure 73: Showtime Add Validation and Success

After creating the new showtime, it will be displayed in the table. In Figure 74, since the current date of this document creation is March 9, 2024, only showtime IDs 1 to 9 are currently active and accessible in the booking frame. Other showtimes are not active and cannot be accessed.

Figure 74: Movie After Insertion

Moreover, if a new showtime is inserted the data necessary for showing the available state of the seats of that showtime for today will be created with states set to TRUE which means all the seats are available currently.
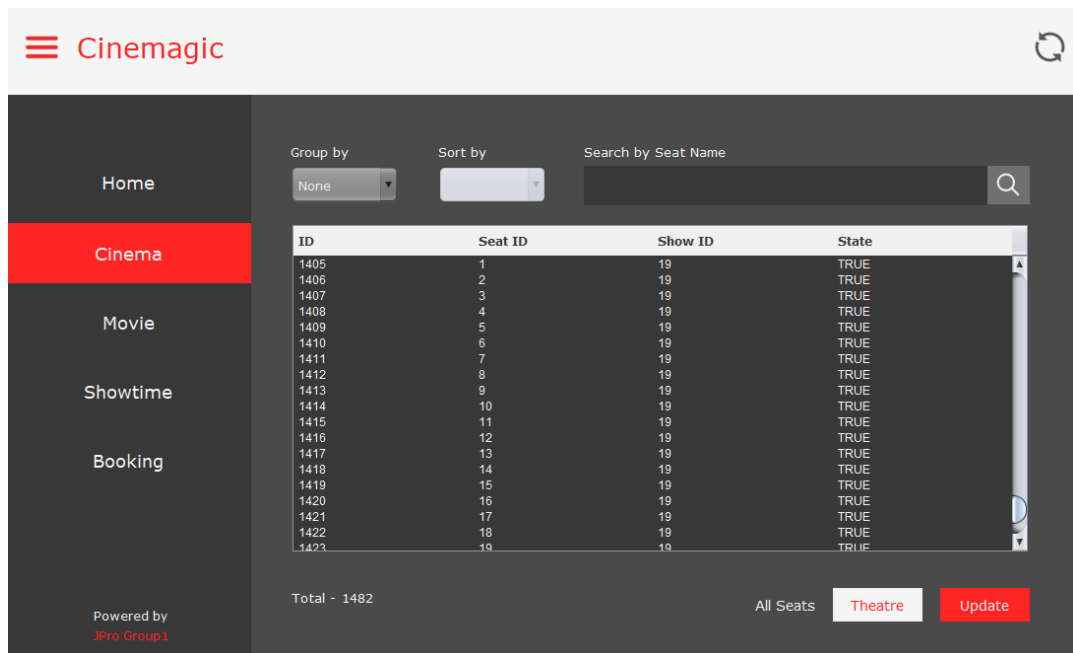

Figure 75: Seat Available Information in Cinema Panel

In the staff dashboard's seat available frame, there's an "Update" button. Clicking it sets all seats associated with showtimes to TRUE, signifying availability for the next day. This daily update ensures seat availability accuracy. That is the only difference between the admin and staff seat available dashboard.
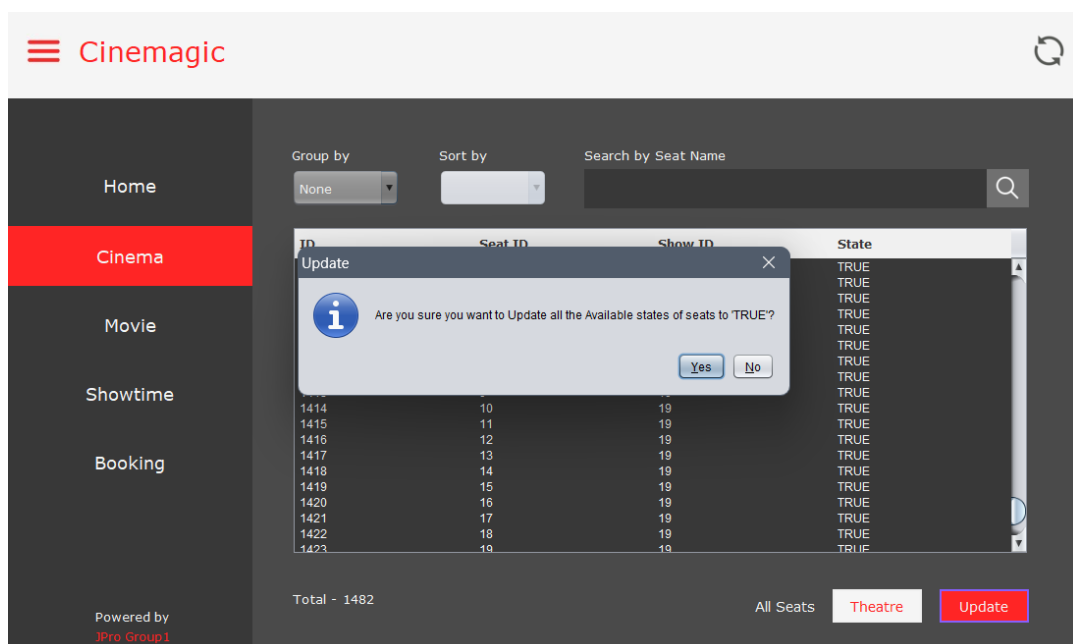
Figure 76: Seat Available Update

...

If a showtime scheduled for deletion is booked by a user in the booking table, the showtime cannot be deleted, displaying a message similar to the one in the Movie frame. This ensures system stability.
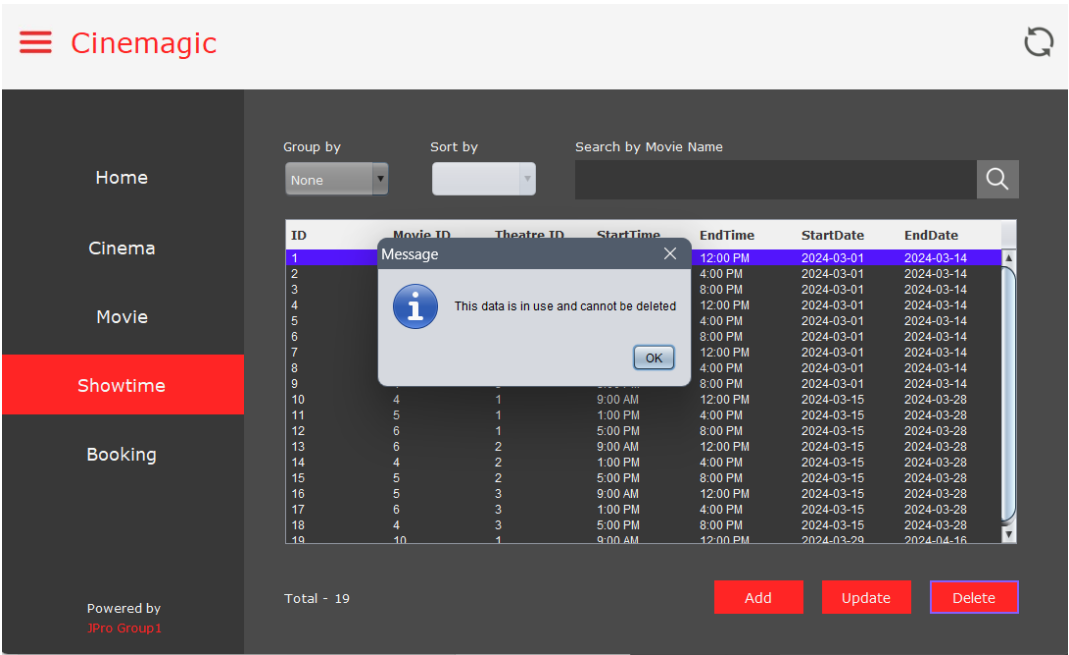
Figure 77: Showtime Delete

The Update frame for the showtime is illustrated in the following figures. Upon selecting the desired showtime from the showtime table, modifications can be made. In the first figure, the movie ID is altered to 10, and the start and end times are adjusted to 9:00 AM and 12:00 PM, respectively. After saving the changes, a message box will pop up, as depicted in the second figure.
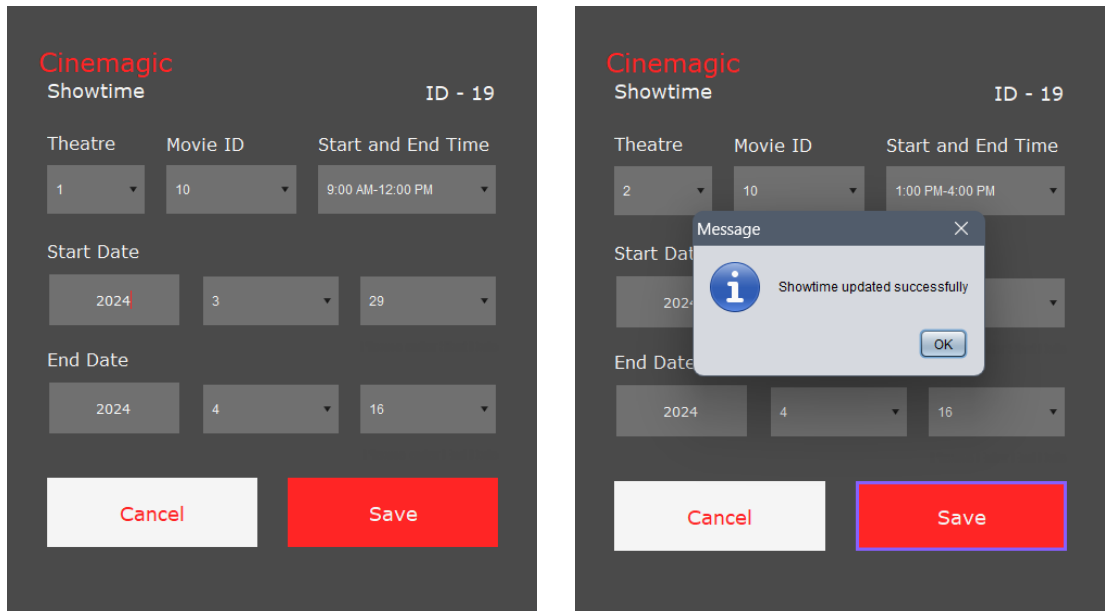
Figure 78: Showtime Update Validation and Success

Figure 79 displays the updated showtime frame following the successful update of the showtime with the ID of 19.
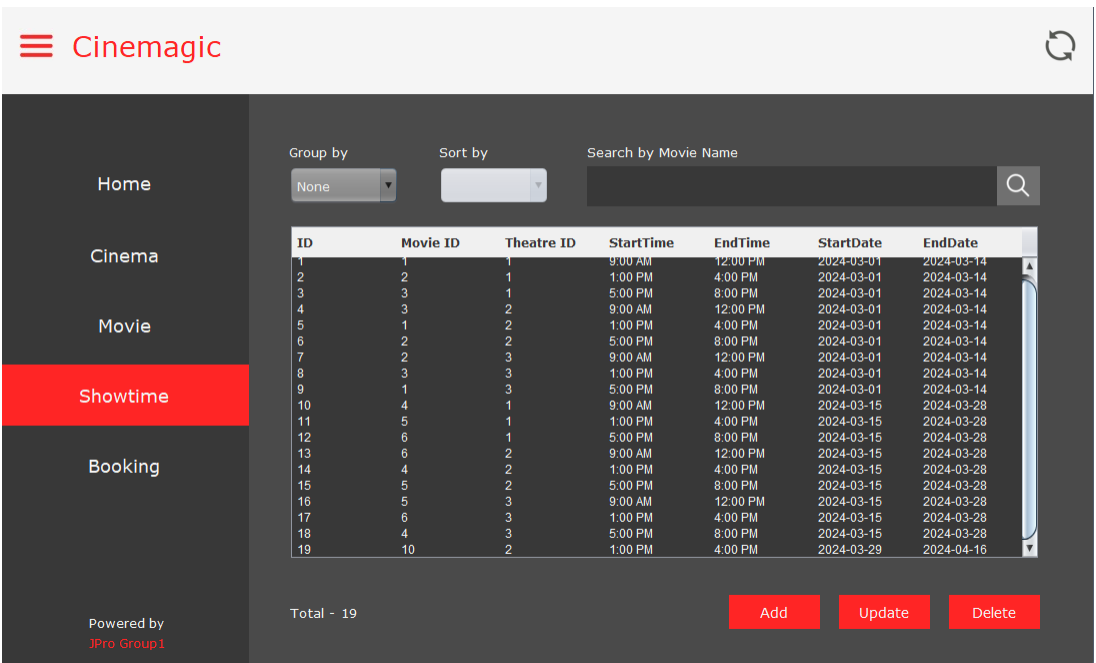
Figure 79: Showtime after Updating

The Booking Frame, accessed by clicking "Booking" on the side navigation bar, features Booking and Booking Detail sections that can be toggled using the "Detail" button and "Booking" button. To create a new booking, click on the "Add" button, opening a new frame exclusively for today's bookings.
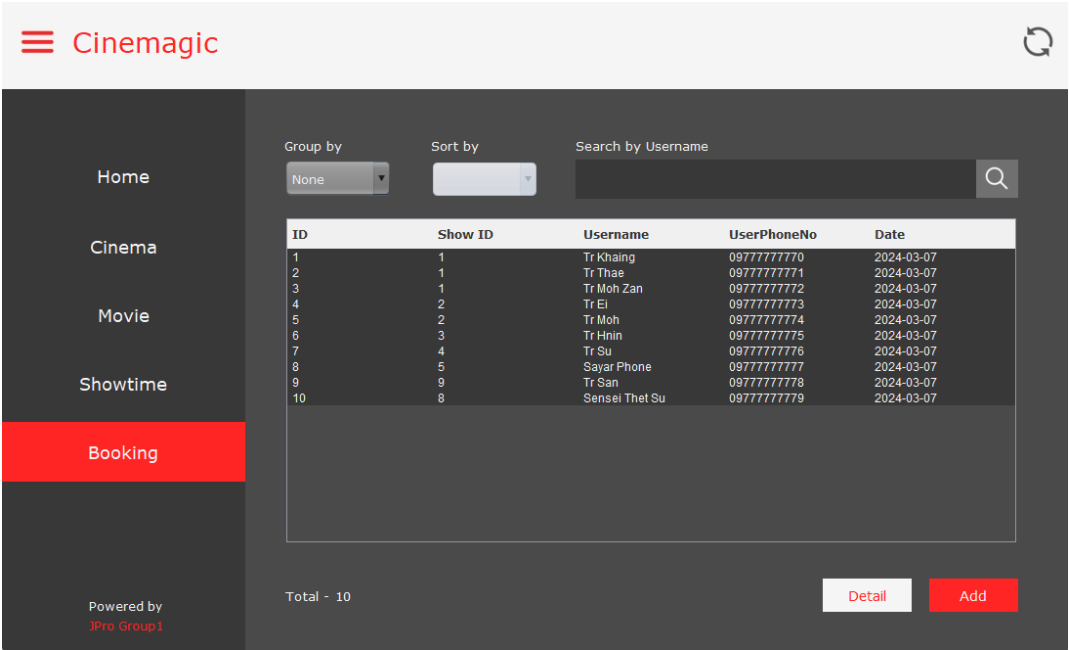
Figure 80: Staff Dashboard's Booking Panel

The Booking Detail frame displays information about the seats, while the Booking frame shows the user's information. The Booking Detail frame utilizes the booking ID to retrieve the seats associated with the specific booking.
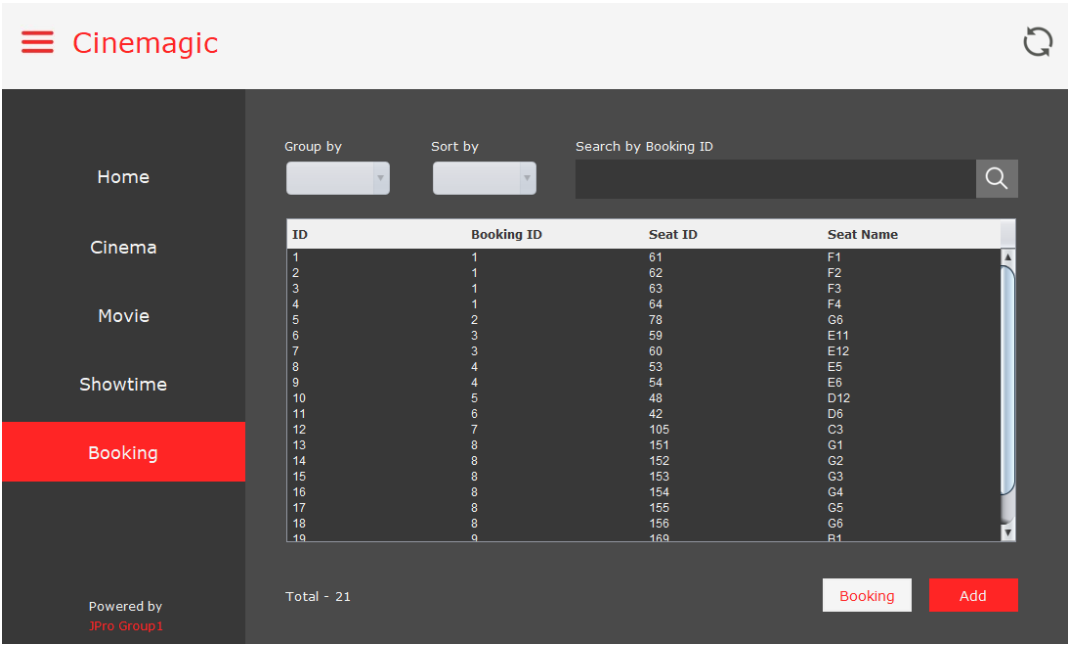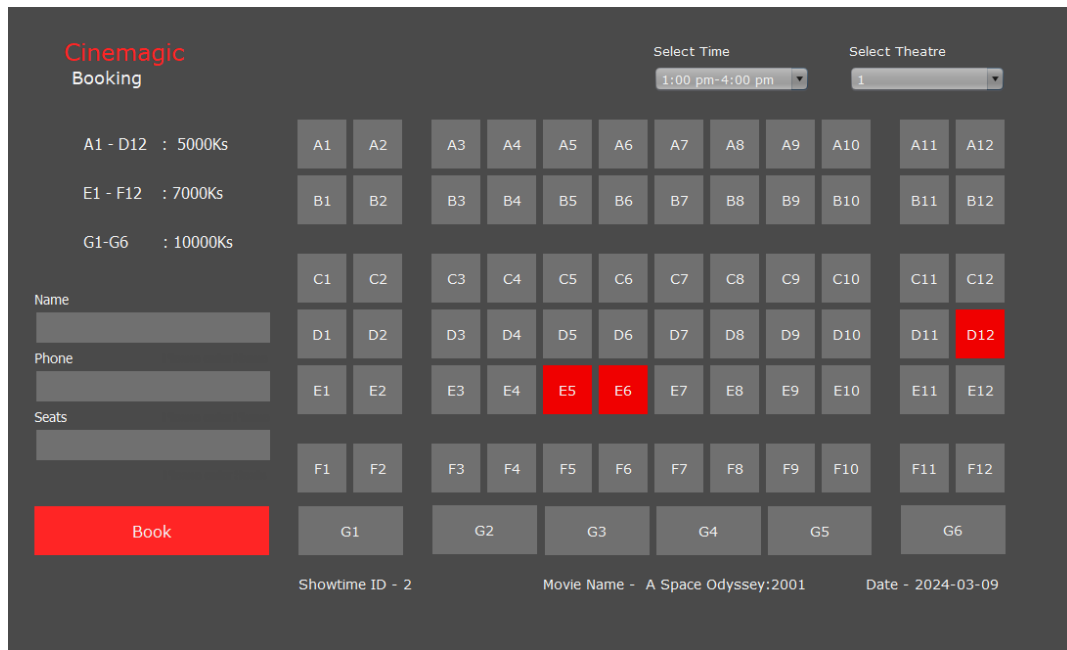
Figure 81: Staff Dashboard's Booking Detail Panel
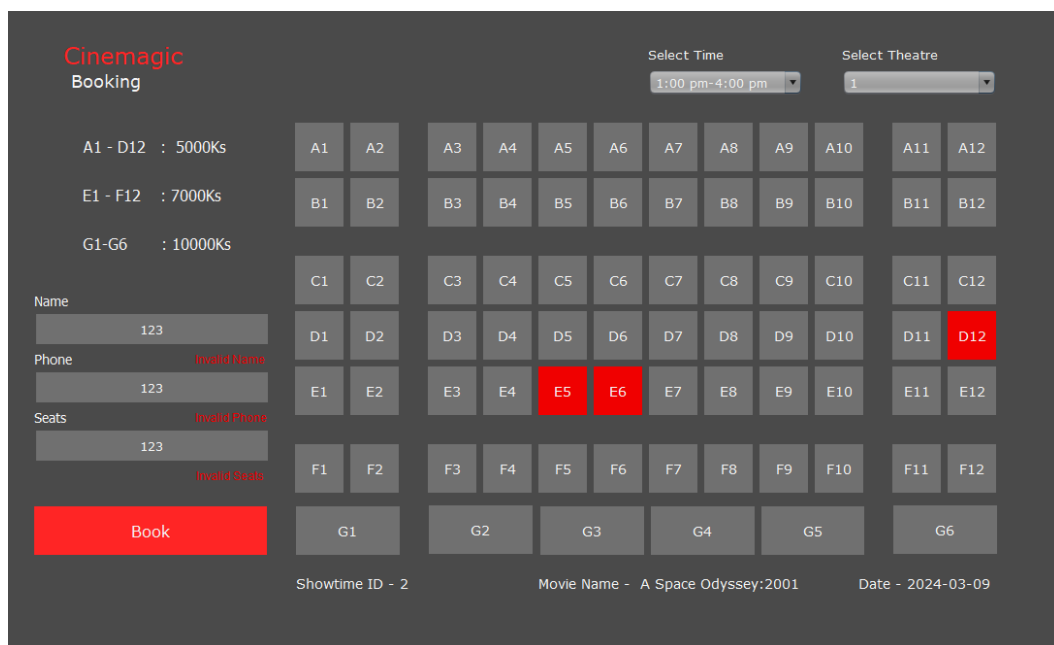
In the booking frame popped up after clicking on the "Add" button, there are two combo boxes for identifying the specific showtime have to be booked in accordance with the user's need. There are three timeline and three theatres to be choose from. After selecting the desired theatre and time, the movie shown in that showtime and the showtime ID will be displayed right under the graphical design for showing the available seats of that showtime extracted from the seat available table.

Figure 82: Booking Add Frame

In Figure 83, with the time set from 1:00pm to 4:00pm and theatre selected as 1, the showtime ID for today's show is 2, featuring "A Space Odyssey: 2001".

Figure 83: Booking Add Validations

The frame includes various validations to ensure data integrity, displaying common error messages for invalid entries. If the username consists only of digits, it's considered invalid. Phone numbers must follow the format "09" followed by 9 digits. In the Seats field, only names from A1 to G6 are allowed. Multiple seat entries are permitted, separated by commas and optional spaces, but repetitions are not allowed.

Figure 84: Booking Add Validations

The following Figure shows the correct and valid entries for creating a new booking. After seats booked successfully message, the color of the seats booked change to Red automatically since the state of the seat changes to FLASE.

Figure 85: Booking Add Success

Figure 86: Booking Add Success

After the booking process, since the user Avery have booked several seats for that showtime, a new data will be inserted in the Booking table and multiple data will be inserted into the Booking Detail table. For this particular case, there would be 6 new rows in the Booking Detail table.
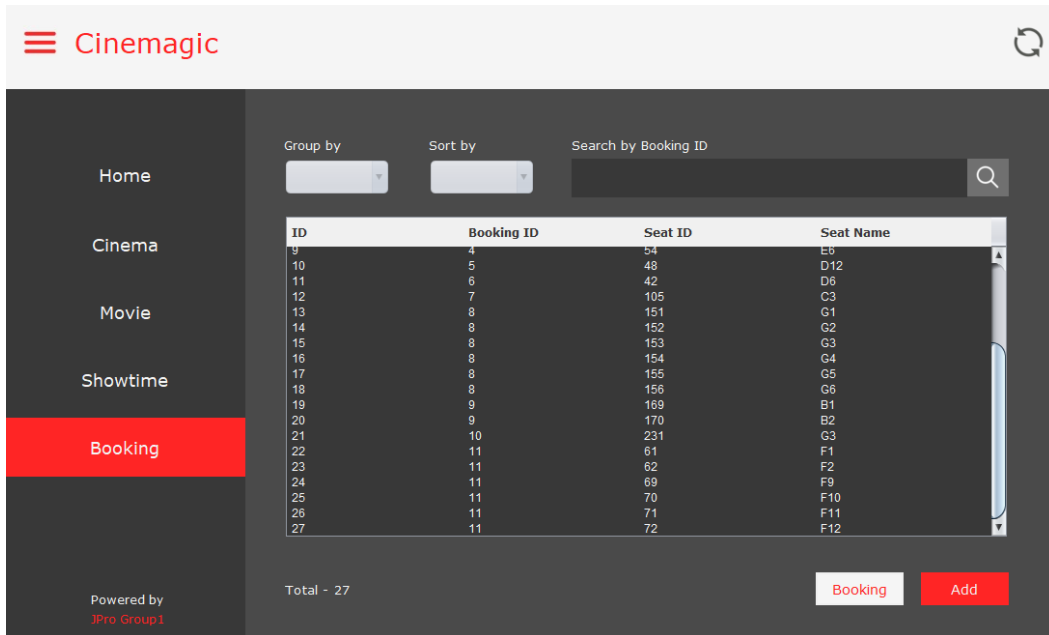

Figure 87: Booking After Insertion

Figure 88 shows the Booking Detail table after the creation of the new booking for Avery.

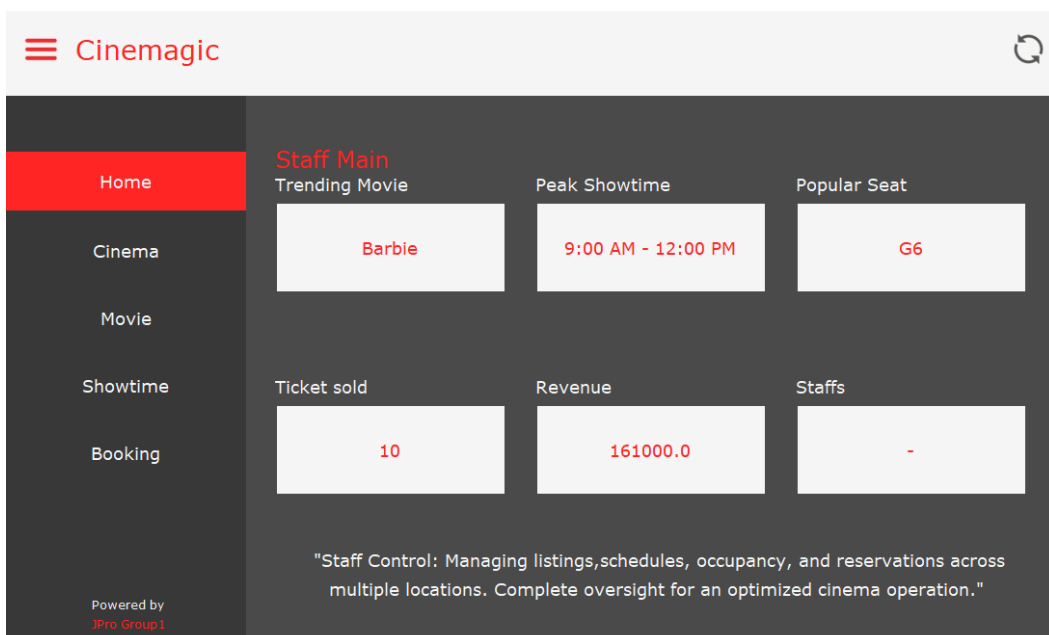Figure 88: Booking Detail After Insertion

The statistics on the Home page dynamically update to reflect changes such as new booking creation. The before and after figures of the Home Page demonstrate these alterations.

Figure 89: Home before Insertion

As depicted in the Figure 90, the number of tickets sold increases by one following the creation of a new booking. Additionally, the popular seat and revenue change from 161,000 to 203,000.
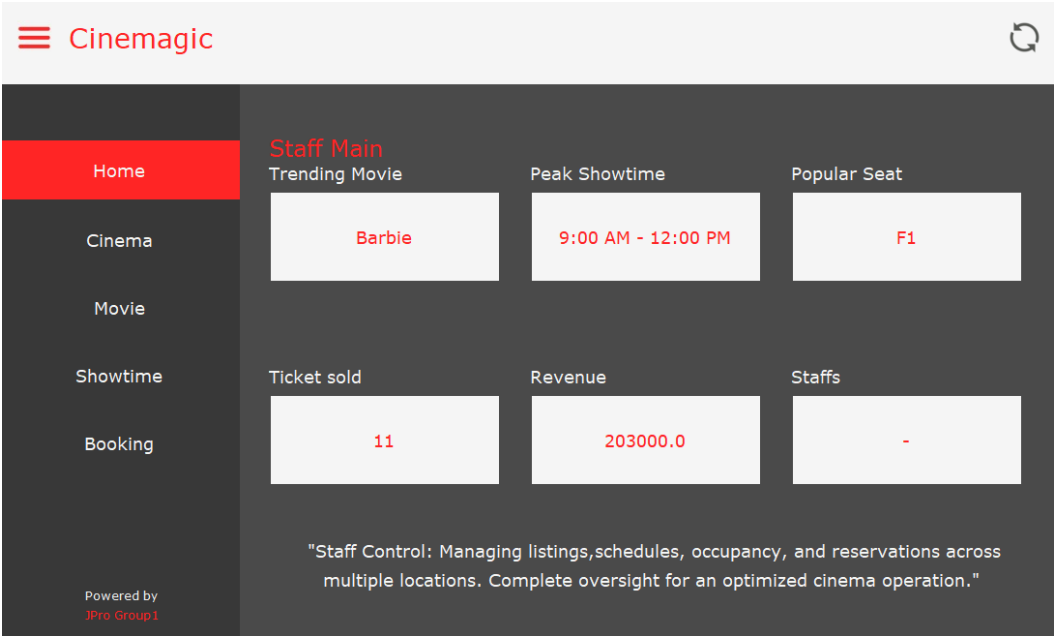

Figure 90: Home After Insertion

Conclusion

In conclusion, the development of the Cinemagic Ticket Reservation System aimed to create an efficient solution for managing ticket reservations at the ticket booth. Throughout the project, our objectives were successfully identified and achieved. We focused on defining system requirements, implementing necessary software components, and ensuring functional requirements were met. We designed and implemented modules tailored for both administrators and staff. The Admin module empowers administrators to manage staff and oversee their work. It provides tools for staff management and offers insights into staff activities. Meanwhile, the Staff module is dedicated to facilitating ticket reservations and operations at the ticket booth. A detailed project schedule guided our progress, emphasizing the use of various modeling diagrams, such as use case diagrams, to refine our system design. The data modeling process, including data flow diagrams, database design, and data dictionary creation, ensured effective management and organization of data within the system. Our system streamlines ticket reservation processes, with administrators having full control over staff management and staff having the necessary tools for efficient ticket booth operations. Challenges encountered during implementation provided valuable lessons in project management and workflow adherence. Ultimately, the project highlighted the importance of collaboration and effective system design in achieving our goals. Relevant sources and materials discussed during the project are documented in the References section provided.

References

- https://www.w3schools.com/sql/default.asp [SQL statements]
- https://stackoverflow.com/[Function Codes]
- https://www.youtube.com/watch?v=jHSBrX8lLWk [Cinema Booking System idea]
- https://adobexdplatform.com/ [Design tools]
- https://www.google.com [Research movies]
- https://www.pinterest.com/[Images]
- https://fontawesome.com/ [icons]
- https://chromewebstore.google.com/detail/colorzilla/[Color Picker]
- Some references are from previous exercises and assignments

  .