جامعة زايد
ZAYED UNIVERSITY

SPRING 2023 -Final Project – SWE 321

Movie Theatre Management System

A Report for the Evaluation Final Project

Submitted by

Student Name (Reg#)

in partial fulfilment for the award of

the degree of

BACHELOR OF COMPUTER APPLICATION

IN

SCHOOL OF COMPUTING SCIENCE AND ENGINEERING

Under the Supervision of
(Supervisor Name)

Assistant/Senior Professor

MAY- 2023

SCHOOL OF COMPUTING SCIENCE AND ENGINEERING

BONAFIDE CERTIFICATE

Certified that this project report “**Movie Theatre Management System**” is the bonafide work of “**Student Name (Reg#)**” who carried out this project work under my supervision.

SIGNATURE OF HEAD	**SIGNATURE OF SUPERVISOR**
Dr. ABC	**(Supervisor Name)**
PhD (Management), PhD(CS)	**Assistant Professor**
Professor& Dean,	**School of Computer Science &**
School of Computer Science &	**Engineering**
Engineering	

ACKNOWLEDGEMENT

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I also express my gratitude to (**Supervisor Name**) for providing me the infrastructure to carry out the project and to all staff members of my collage who were directly and indirectly medium in enabling me to stay committed for the project.

Problem Analysis:

The Movie Ticketing Management System is designed to automate the process of buying movie tickets. The system should allow customers to browse available movies, select seats, make payments, and receive tickets electronically. The system should also allow employees to manage movie showtimes, update ticket prices, and view customer information.

Modules:

The following modules are used in the Movie Ticketing Management System:

Module Name: MainPage
Class Name: MainPage

Purpose: This Class defines a GUI application's main page, which allows the user to select their role from three options: Manager, Staff, or Customer. Depending on the selection, the application opens a new window (Manager, Staff, or Customer) with its own layout and functionality, and the main page window is hidden. The buttons change color when the mouse is over them. There is also a Quit button to close the application.

Module Name: Customer
Class Name: Customer

Purpose: This class named "Customer" which is a login page for customers. It creates a GUI with a username and password entry fields, a "Keep me logged in" checkbox, and three buttons for logging in, going back, and creating a new account. When the user clicks the login button, it checks if the entered username and password match with the data stored in the database. If the login credentials are correct, it opens a new window and shows the main page for the customer. If the login credentials are incorrect, it shows an error message. The create button opens a new window for creating a new account, and the back button takes the user back to the main page.

Module Name: Customer Main Page

Class Name: CustMain

Purpose: The code defines a class called CustMain which inherits from another class called Customer. It creates a customer main menu page that allows the user to update their profile, make a ticket booking, view booking details, and check ticket availability and seat selection. The sch method retrieves data from a database based on a selected date and displays the results in a new window. The other methods Update_Profile_window, Booking_History_window, and logout open different windows based on user actions.

Module Name: Search Results

Class Name: SearchResults

Purpose: The class named SearchResults which is a subclass of CustMain. It has an initializer which initializes some instance variables.
The class also defines a method boo which is executed when the user wants to book a ticket for a movie. The method takes some inputs from the user and updates the booking details in the database.
There is also a back method which takes the user back to the previous screen. The class also creates a GUI where users can search for movies based on the date and time, and book tickets for the available seats.

Module Name: Update Customer Profile

Class Name: CustProfile

Purpose: This Python class creates a window for customers to update their profile information. It includes fields for the customer's first name, last name, email address, age, and password. The customer can edit these fields and click the "Update Details" button to save the changes. The class validates the inputs and displays an error message if the inputs are not valid. If the changes are saved successfully, a success message is displayed, and the window is closed. The class also includes a "Back" button that returns the user to the previous window and a "Logout" button that logs the user out. The code uses the tkinter module for creating GUIs.

Module Name: Create New Account

Class Name: NewAccount

Purpose: This is a NewAccount class that inherits from a Customer class. It creates a GUI that allows users to enter their details to create a new account. The GUI includes fields for the user's first name, last name, email address, age, username, and password. Once the user has filled out all of the fields and clicks the "Create new account" button, the code validates the input and inserts the user's information into a database table named "customers" if the input is valid. If the input is invalid, the code displays an error message indicating what went wrong. The code also includes a "Back" button that allows the user to return to the previous screen.

Module Name: Book Seats

Class Name: Booked

Purpose: This is a class Booked that inherits from CustProfile and SearchResults. It initializes several labels and buttons for a booking confirmation page, retrieves customer details from a database, and inserts a new booking into a separate database. The booking details include the customer's name, email, age, the date and time of the booking, and the assigned seat number.

Module Name: Booking History

Class Name: BookHist

Purpose: This class BookHist inherits from a class called Booked. It creates a window that displays the booking history of the logged-in user.

The __init__ method initializes various labels and buttons, as well as queries the database for the user's booking history. It then populates the window with the booking history data. Each row displays the date, time, movie title, seat number, and a remove button.

The remove method is used to remove a booking from the user's booking history. It asks for confirmation, checks if the date and time of the booking has already passed, and then removes the booking from the database. It then updates the movie database to reflect the change in the number of available seats. Finally, it displays a message box to confirm that the booking has been removed.

Module Name: Manager Login

Class Name: Manager

Purpose: This class Manager inherits from the Customer class. The Manager class has an __init__ method that calls the __init__ method of the parent class. The Manager class also has a login method that reads a file named manager.txt and compares the username and password entered by the user to the data in the file. If the username and password match, it opens a new window with the ManagerMain class and displays a success message.

Module Name: Manager Main Page

Class Name: ManagerMain

Purpose: This class ManagerMain represents a graphical user interface (GUI) for a movie management system. The GUI has four buttons: "Add Movie", "Schedule Shows", "Add a

Customer as a Member", and "Logout". The add_movie_func function creates a new window for adding movie details and submits them to a database using the add_movie_to_database function. The logout function prompts the user to confirm that they want to log out before navigating to the main page. The Add_film_showings function navigates to a window for scheduling showings of movies. The Add_member function creates a new window for adding a customer as a member to the system.

Module Name: View Booking Details

Class Name: Showings

Purpose: This is a class called Showings, which is a child class of ManagerMain. It displays a list of movies with their date, time, title, description, booked seats, available seats, and a button to see the seating arrangement. The movies are ordered by date and time, with the earliest dates and times first. There are buttons to export the movies to a text file, go back to the previous screen, and log out of the system. When the export button is clicked, a text file called "export.txt" is created, and a list of movies with their date, time, title, booked seats, and available seats is written to the file.

Module Name: Add Movie

Class Name: AddShowings

Purpose: This is a Python class AddShowings, which inherits from the Showings class. The AddShowings class has a constructor that creates a frame, label, and various form elements such as labels, option menus, text boxes, and buttons for adding a new showing. When the user clicks the "Add Film Showing" button, the code reads the values of the form elements, validates them, and inserts a new showing into the list of showings if the values are valid. If the values are not valid, an error message is displayed.

Module Name: View Seats Empty

Class Name: SeeSeatsEmp

Purpose: This class SeeSeatsEmp inherits from another class Showings. The SeeSeatsEmp class displays a seat layout for a movie theater, with green buttons representing available seats and red buttons representing taken seats. The number of taken seats is provided in the booked parameter. The layout is created using the Button and Frame widgets from the tkinter library. The layout is divided into 10 rows of seats, each with 10 seats, except for the last row, which may have fewer seats. The back and log buttons are also created to allow the user to return to the previous screen or to log out.

Module Name: Staff Login

Class Name: Staff

Purpose: This is a class representing the login page for staff members. It inherits from the Customer class, which likely includes some shared functionality with regular customers. The login method is called when the staff member attempts to log in with their username and password. The method reads usernames and passwords from a file called staff.txt, checks if the entered credentials match any of the entries in the file, and if a match is found, opens a new window with the StaffMain class (not shown). If there is no match, a warning message is displayed.

Module Name: Staff Main Page

Class Name: StaffMain

Purpose: This StaffMain class inherits from the Staff class and adds the necessary buttons and functions for the staff main menu page. The logout function creates a pop-up message box to confirm if the user wants to log out and then opens the main page (MainPage class) if the user confirms. The See_list and Add_film_showings functions open the respective pages (Showings class and AddShowings class) when their buttons are clicked. Overall, the code follows good object-oriented principles by separating the different functionalities into their respective classes.

Databases:

The Customer_Database_Initialiser() function initializes the database for customers, creating a table named customers with columns for first name, last name, email, age, username, and password. It also reads from a file named customers.txt and inserts the data into the customers table.

The Films_Database_Initialiser() function initializes the database for film showings, creating a table named movies with columns for date, time, title, description, booked, and available. It also reads from a file named MOVIES.txt and inserts the data into the movies table.

The Bookings_Database_Initialiser() function initializes the database for film bookings, creating a table named bookings with columns for first name, last name, date, time, seat number, and username.

The main() function initializes the Tkinter window, sets the window title and geometry, and creates an instance of the MainPage class. It also calls the three database initialization functions.

Overall, the code sets up the initial databases and GUI for the movie theatre management system, allowing users to log in, view movie showings, and make bookings.

Design:

The UML class diagram for the Movie Ticketing Management System is as follows:

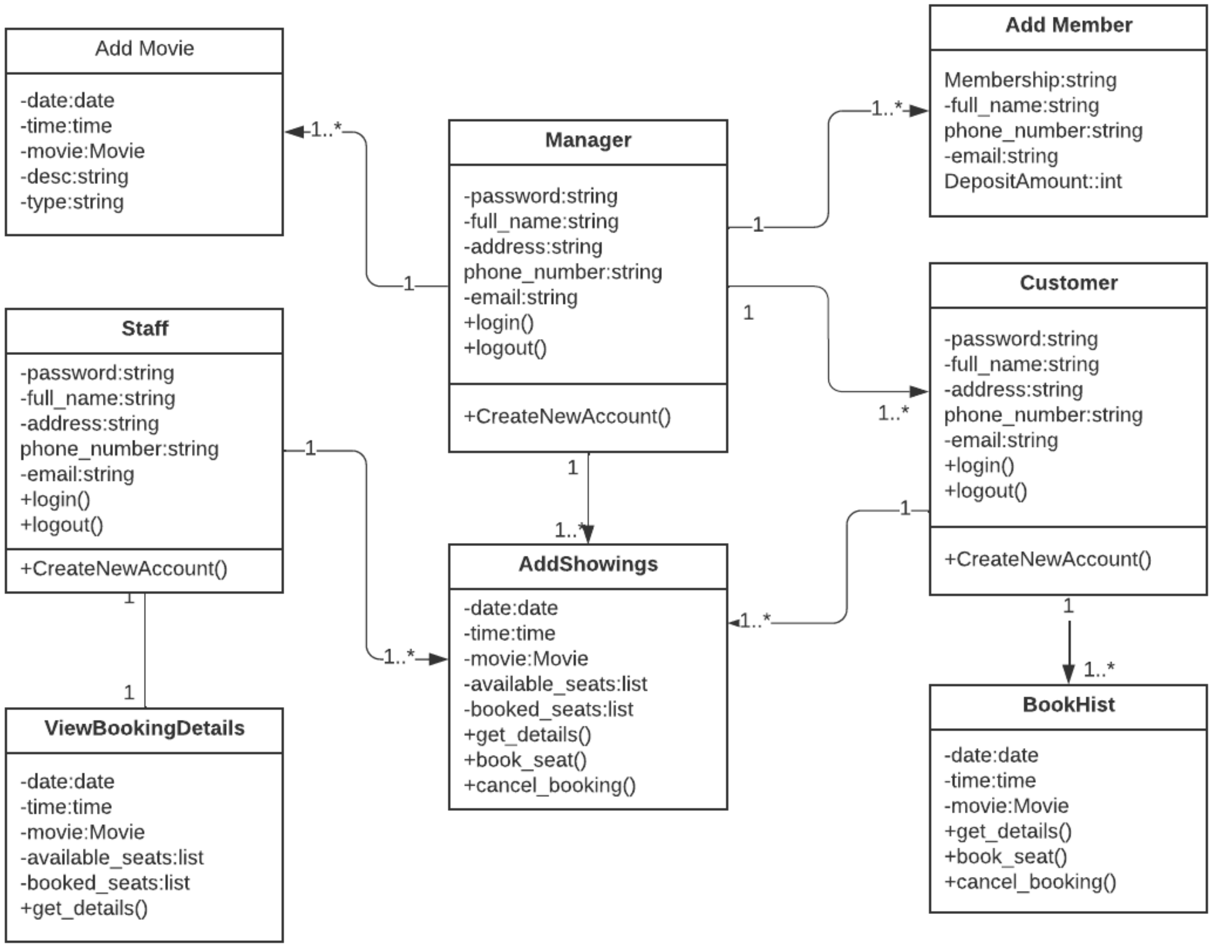


Fig.1: UML class diagram for the Movie Ticketing Management System.

The class diagram shows the relationship between the classes and their attributes/data, behavior/function, class relationships, and cardinality.

Here is the pseudocode or algorithm for the "Movie Theatre Management System":

Main Page

- Create the GUI elements of the main page
- Create functions to handle user actions
- Define the logical flow for each action
- Implement error handling for invalid user inputs
- Save any changes to the databases and update the interface as necessary

Manager Interface:

Note: Manager Login Credentials e.g (Username & Password) are already created & stored in a text file named as “Manager”. Copy credentials and paste them in Login fields to login.

1. Start the program
2. Display main menu with options to add a movie, schedule shows, and add a customer as a member
3. Let the user choose an option
4. If the user chooses to add a movie:

A. Prompt the user to enter the movie title, description, genre, and duration
B. Create a new movie object with the user's input
C. Save the movie object to the database
D. Display a success message
E. If the user chooses to schedule shows:
F. Display a list of movies available in the database
G. Prompt the user to choose a movie to schedule shows for
H. Prompt the user to enter the date and time for the show
I. Create a new show object with the movie, date, and time
J. Save the show object to the database
K. Display a success message

5. If the user chooses to add a customer as a member:

A. Prompt the user to enter the customer's name, email, and phone number
B. Create a new customer object with the user's input
C. Save the customer object to the database
D. Display a success message

6. Display the main menu again
7. If the user chooses to exit the program, terminate the program
8. Otherwise, repeat from step 3

Staff Interface

1. Start
2. Initialize the staff class and its attributes
3. Display options for staff to select from:
    a) Make a ticket booking for a customer
    b) View Booking Details
    c) Check ticket availability
    d) Seat Selection
4. Get input from staff on which option they want to choose
5. If the staff chooses option a, then
    a) Ask for customer details (name, contact, etc.)
    b) for movie availability and seat availability
    c) If available, book the ticket and provide ticket details to the customer
    d) If not available, inform the customer and suggest alternate movie timings or seats
6. If the staff chooses option b, then
    a) Ask for booking ID or customer details
    b) Display booking details for the requested booking
7. If the staff chooses option c, then
    a) Ask for movie details and show timings
    b) Check for ticket availability and display available seats
8. If the staff chooses option d, then
    a) Ask for movie details and show timings
    b) Display the seat map for the selected show
    c) Let the staff select the desired seats for the customer
9. End.

Customers Interface

- Create a login page for customers
- Verify customers credentials
- Provide options to add, edit or delete film showings and view booking details
- Save any changes to the databases and update the interface as necessary

Create the main window for the system

- Initialize the window object
- Set the window title and geometry
- Load a background image
- Create the main page object and place it in the window
- Run the main loop of the window

Registration Module

- Provide a registration page for new customers
- Verify that all required fields are filled out correctly
- Generate a unique username and password for the new customer
- Insert the customer data into the customer database
- Update the interface to show the new customer details

Booking Module

- Provide a film selection page for customers
- Display available showings and allow customers to select a date and time
- Show available seats and allow customers to select seats
- Allow customers to order refreshments and pay for the booking
- Insert the booking data into the bookings database
- Update the interface to show the new booking details

Cancellation Module

- Provide a cancellation page for customers
- Allow customers to select a booking to cancel
- Remove the booking data from the bookings database
- Update the interface to show the cancelled booking details

Reporting Module

- Provide a reporting page for employees
- Display various statistics about film showings and bookings
- Allow employees to filter and sort the data as needed

Initialize the customer database

- Open a connection to the database
- Create a cursor object
- Create the customers table if it does not exist
- Parse the customer data from a text file and insert it into the table
- Commit changes and close the connection

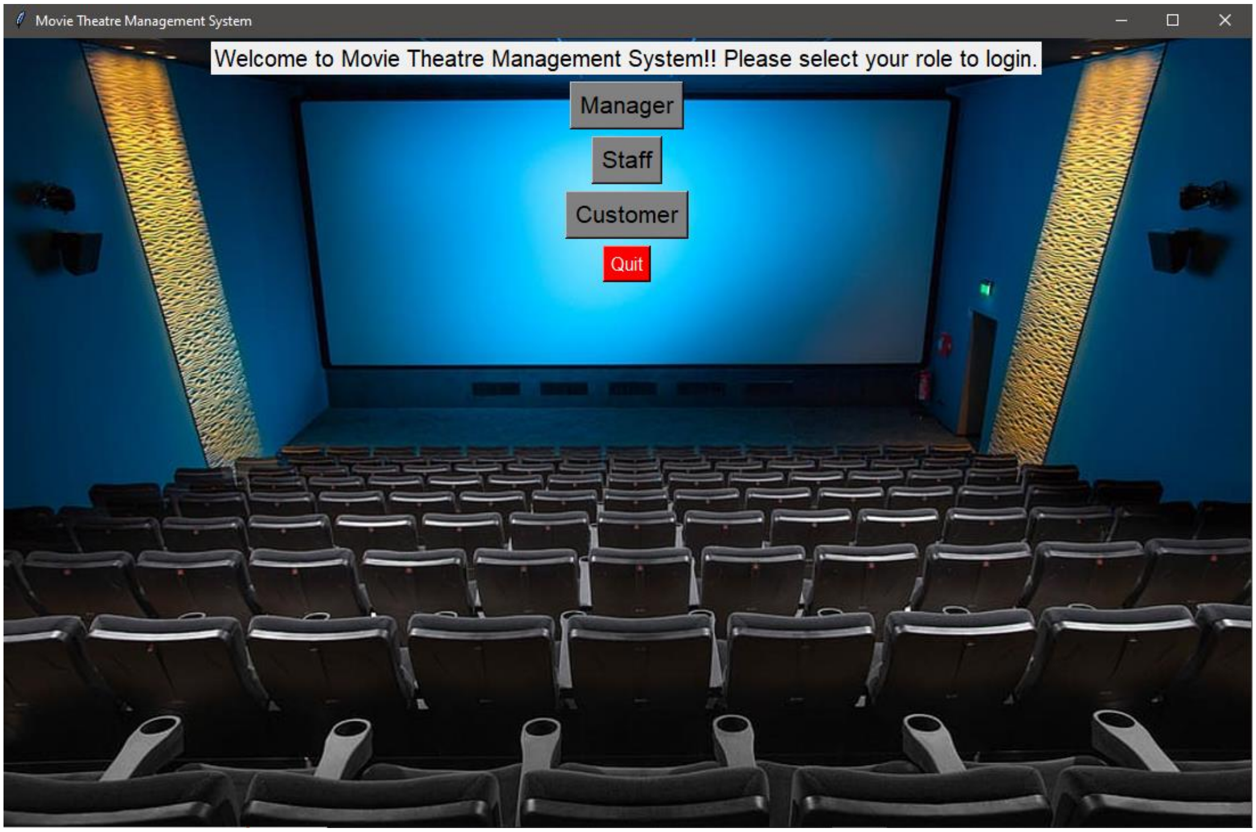
Initialize the film database

- Open a connection to the database
- Create a cursor object
- Create the movies table if it does not exist
- Parse the film data from a text file and insert it into the table
- Commit changes and close the connection

Initialize the bookings database

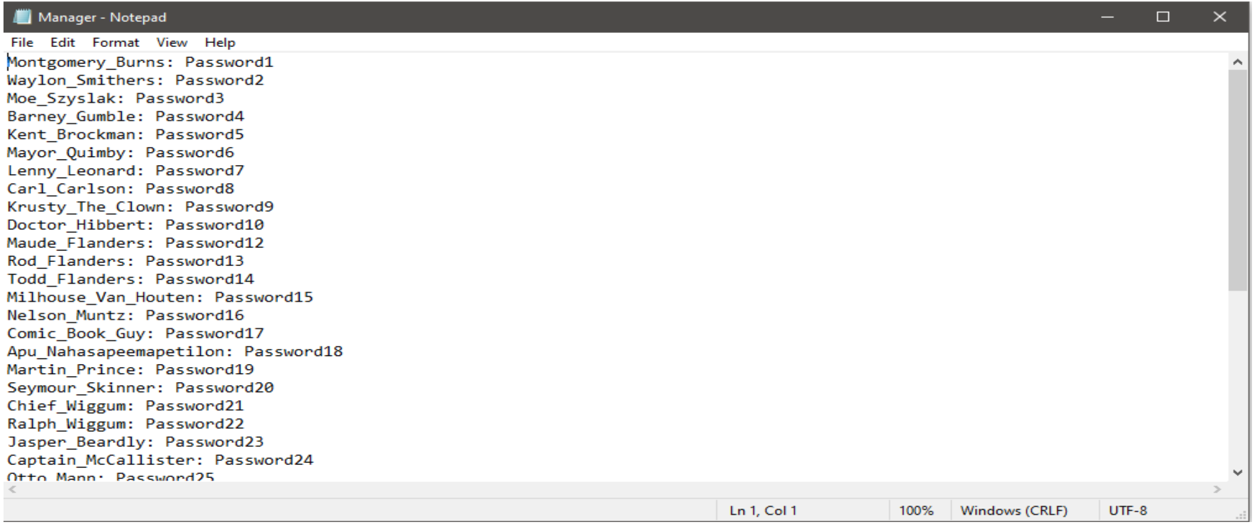
- Open a connection to the database
- Create a cursor object
- Create the bookings table if it does not exist
- Commit changes and close the connection

Main Page:



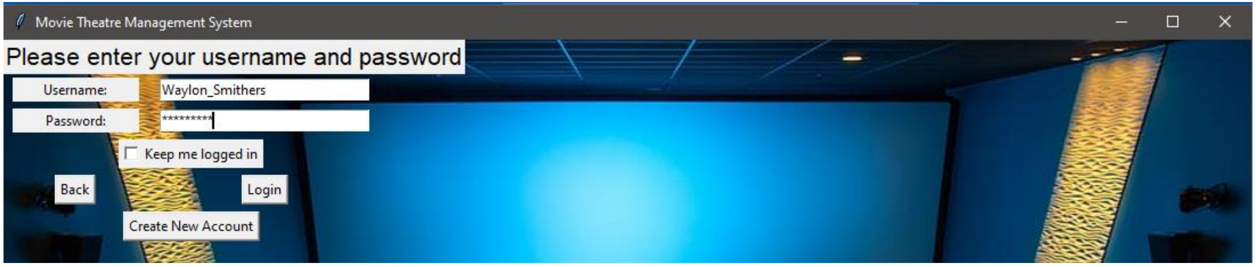
Welcome to Movie Theatre Management System!! Please select your role to login.

Manager Credentials:



```
Montgomery_Burns: Password1
Waylon_Smithers: Password2
Moe_Szyslak: Password3
Barney_Gumble: Password4
Kent_Brockman: Password5
Mayor_Quimby: Password6
Lenny_Leonard: Password7
Carl_Carlson: Password8
Krusty_The_Clown: Password9
Doctor_Hibbert: Password10
Maude_Flanders: Password12
Rod_Flanders: Password13
Todd_Flanders: Password14
Milhouse_Van_Houten: Password15
Nelson_Muntz: Password16
Comic_Book_Guy: Password17
Apu_Nahasapeemapetilon: Password18
Martin_Prince: Password19
Seymour_Skinner: Password20
Chief_Wiggum: Password21
Ralph_Wiggum: Password22
Jasper_Beardly: Password23
Captain_McCallister: Password24
Otto_Mann: Password25
```

Login Screen (Manager)



Movie Theatre Management System

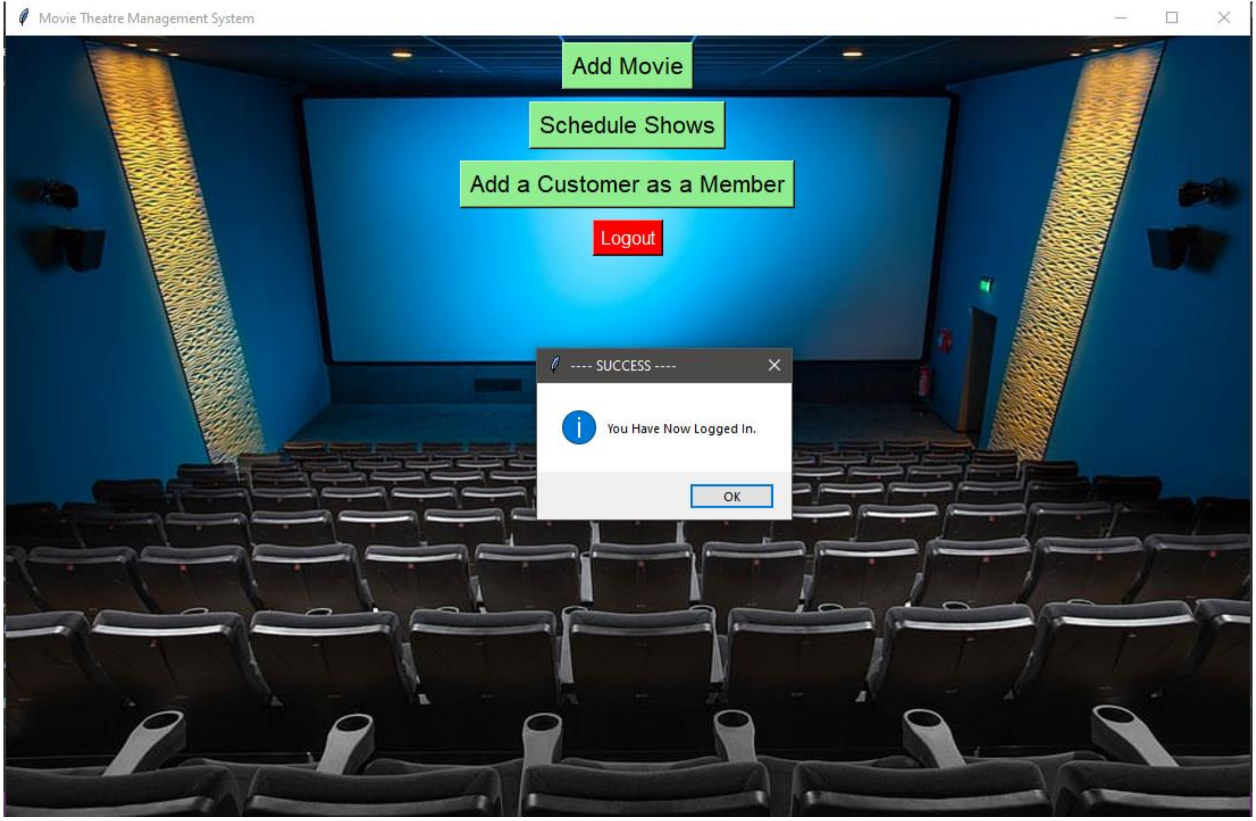
Please enter your username and password

Username: Waylon_Smithers

Password: *********

□ Keep me logged in

Manager Profile:

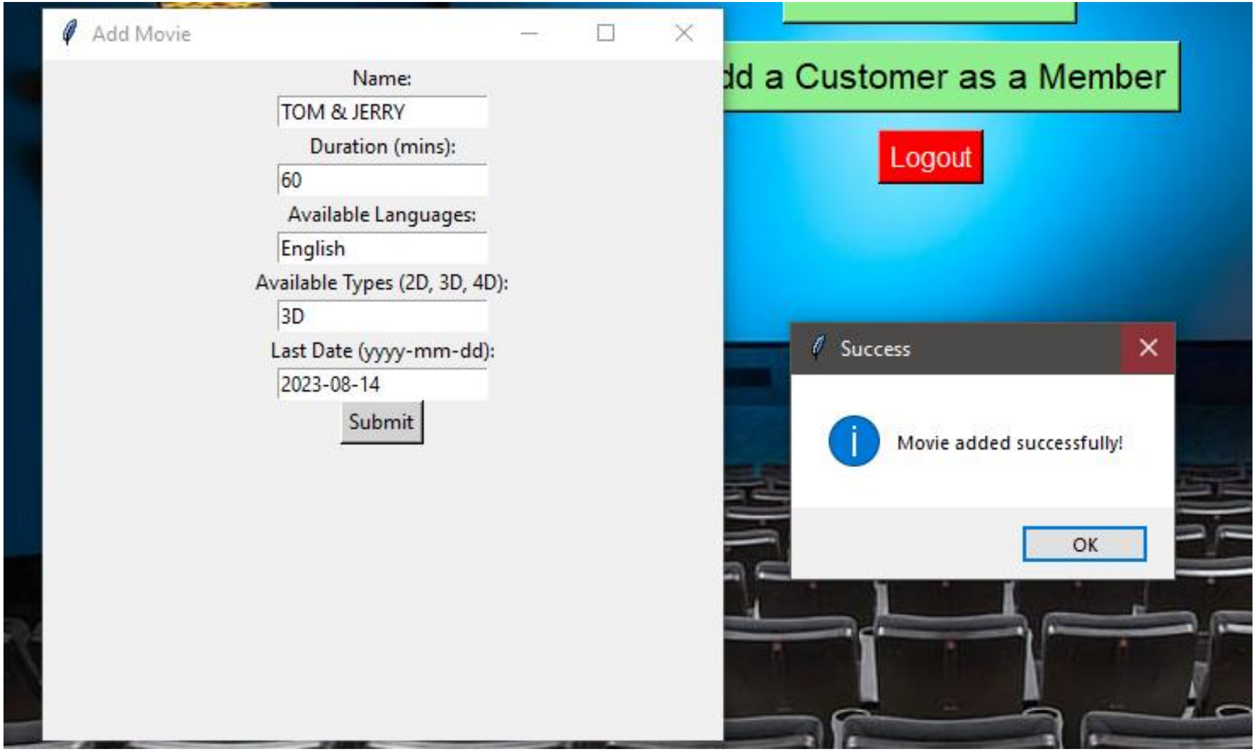


Movie Theatre Management System

---- SUCCESS ----

You Have Now Logged In.

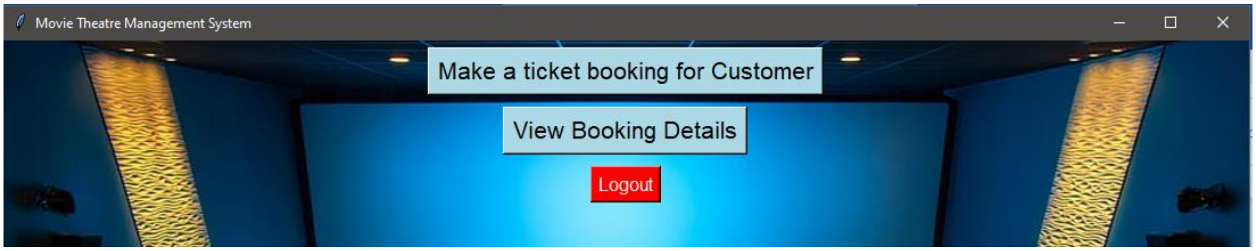
Add Movies (Manager Profile)



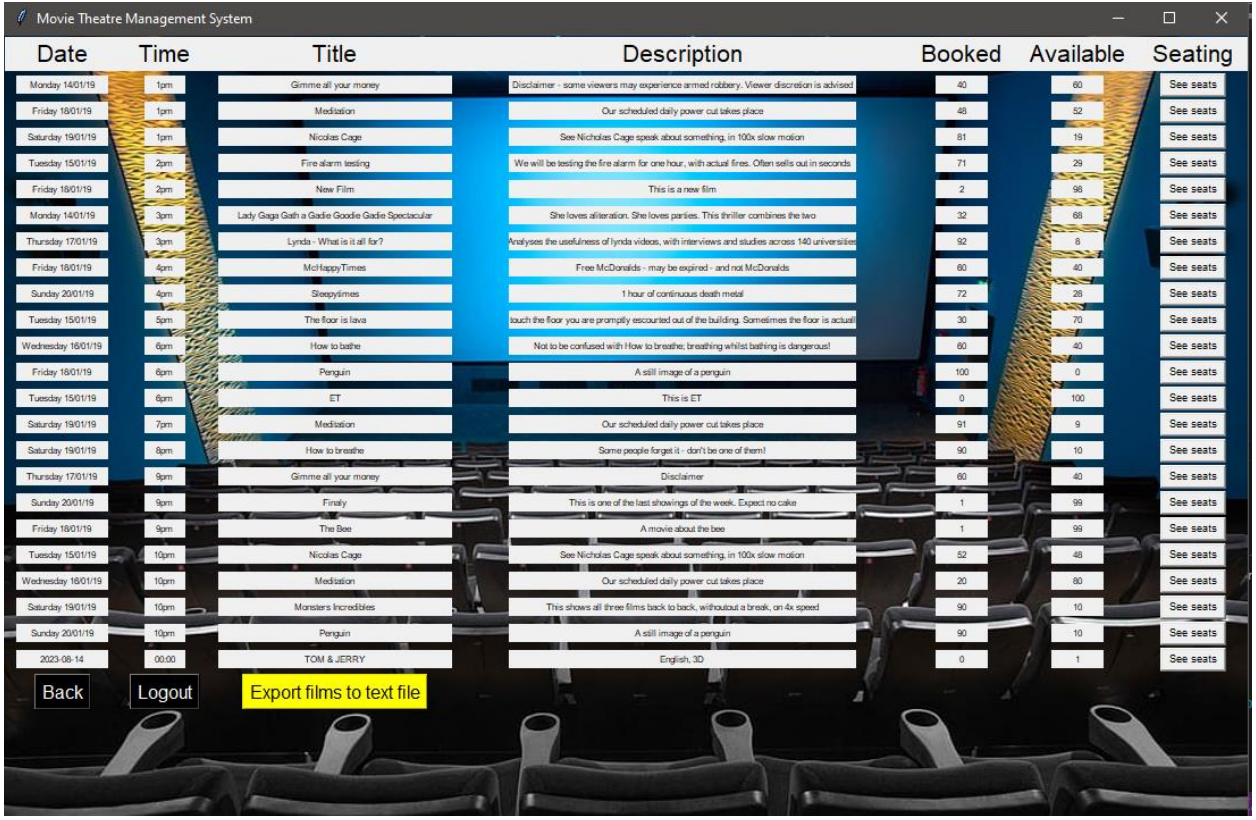
Name:
TOM & JERRY
Duration (mins):
60
Available Languages:
English
Available Types (2D, 3D, 4D):
3D
Last Date (yyyy-mm-dd):
2023-08-14

Movie added successfully!

Staff Profile:

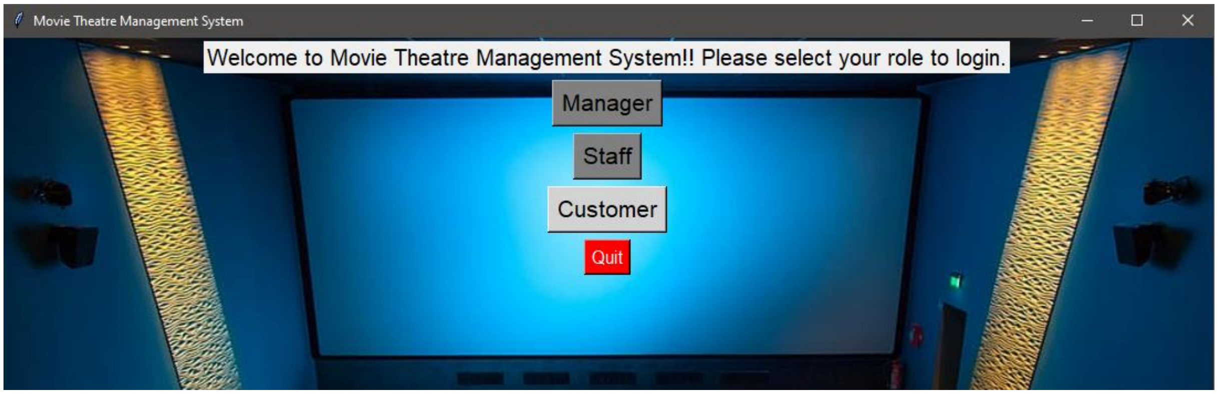

Movie Theatre Management System
Make a ticket booking for Customer
View Booking Details
Logout

View Booking Details (Staff)



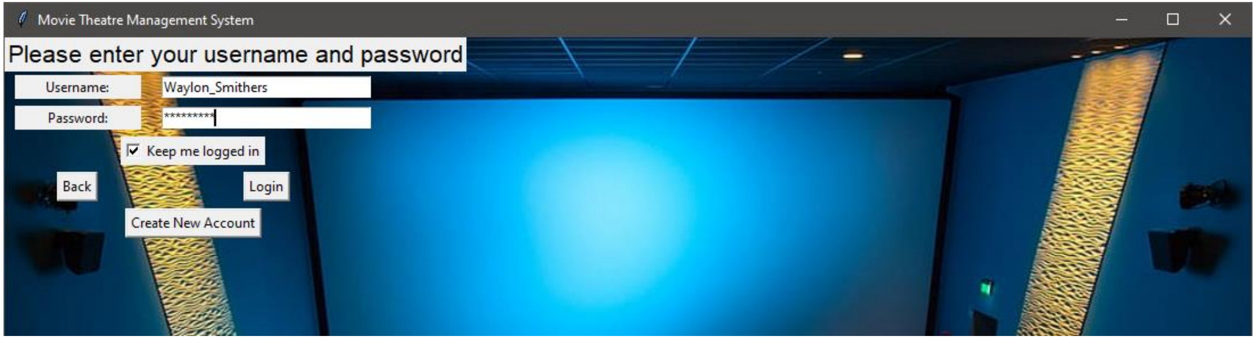
Date	Time	Title	Description	Booked	Available	Seating
Monday 14/01/19	1pm	Gimme all your money	Disclaimer - some viewers may experience armed robbery. Viewer discretion is advised	40	60	See seats
Friday 18/01/19	1pm	Meditation	Our scheduled daily power cut takes place	48	52	See seats
Saturday 19/01/19	1pm	Nicolas Cage	See Nicholas Cage speak about something, in 100x slow motion	81	19	See seats
Tuesday 15/01/19	2pm	Fire alarm testing	We will be testing the fire alarm for one hour, with actual fires. Often sells out in seconds	71	29	See seats
Friday 18/01/19	2pm	New Film	This is a new film	2	98	See seats
Monday 14/01/19	3pm	Lady Gaga Gath a Gadie Goodie Gadie Spectacular	She loves aliteration. She loves parties. This thriller combines the two	32	68	See seats
Thursday 17/01/19	3pm	Lynda - What is it all for?	Analyses the usefulness of lynda videos, with interviews and studies across 140 universities	92	8	See seats
Friday 18/01/19	4pm	McHappyTimes	Free McDonalds - may be expired - and not McDonalds	60	40	See seats
Sunday 20/01/19	4pm	Sleepytimes	1 hour of continuous death metal	72	28	See seats
Tuesday 15/01/19	5pm	The floor is lava	touch the floor you are promptly escourted out of the building. Sometimes the floor is actuall	30	70	See seats
Wednesday 16/01/19	6pm	How to bathe	Not to be confused with How to breathe; breathing whilst bathing is dangerous!	60	40	See seats
Friday 18/01/19	6pm	Penguin	A still image of a penguin	100	0	See seats
Tuesday 15/01/19	6pm	ET	This is ET	0	100	See seats
Saturday 19/01/19	7pm	Meditation	Our scheduled daily power cut takes place	91	9	See seats
Saturday 19/01/19	8pm	How to breathe	Some people forget it - don't be one of them!	90	10	See seats
Thursday 17/01/19	9pm	Gimme all your money	Disclaimer	60	40	See seats
Sunday 20/01/19	9pm	Finaly	This is one of the last showings of the week. Expect no cake	1	99	See seats
Friday 18/01/19	9pm	The Bee	A movie about the bee	1	99	See seats
Tuesday 15/01/19	10pm	Nicolas Cage	See Nicholas Cage speak about something, in 100x slow motion	52	48	See seats
Wednesday 16/01/19	10pm	Meditation	Our scheduled daily power cut takes place	20	80	See seats
Saturday 19/01/19	10pm	Monsters Incredibles	This shows all three films back to back, withoutout a break, on 4x speed	90	10	See seats
Sunday 20/01/19	10pm	Penguin	A still image of a penguin	90	10	See seats
2023-08-14	00:00	TOM & JERRY	English, 3D	0	1	See seats

Customer Window:



Welcome to Movie Theatre Management System!! Please select your role to login.

Customer Login Screen:



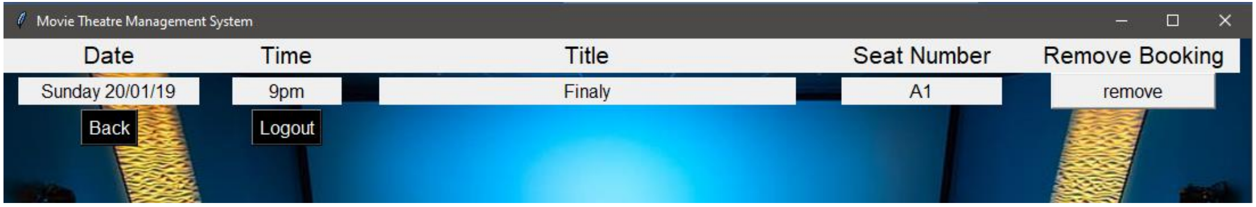
Please enter your username and password

Username: Waylon_Smithers

Password: *********

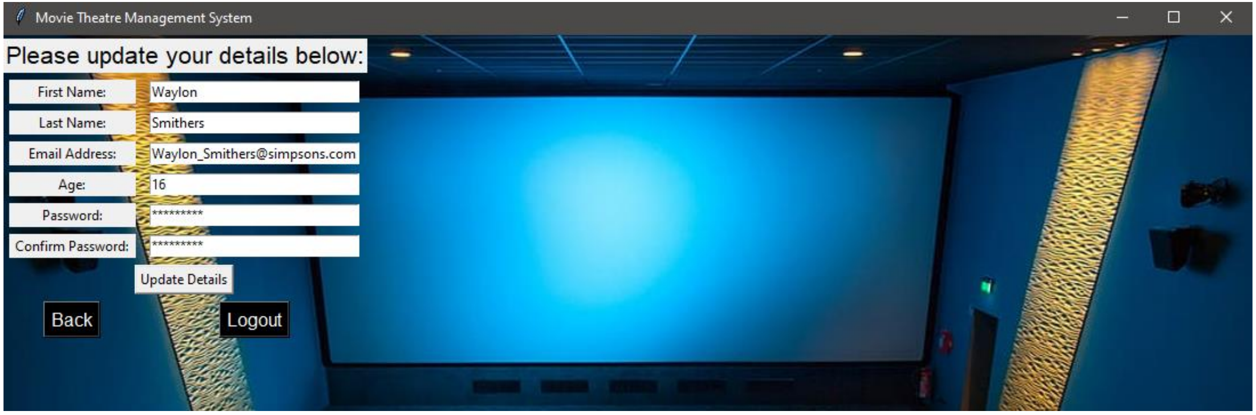
☑ Keep me logged in

View Booking Details:



Date	Time	Title	Seat Number	Remove Booking
Sunday 20/01/19	9pm	Finaly	A1	remove

Update Profile:



Please update your details below:

First Name: Waylon

Last Name: Smithers

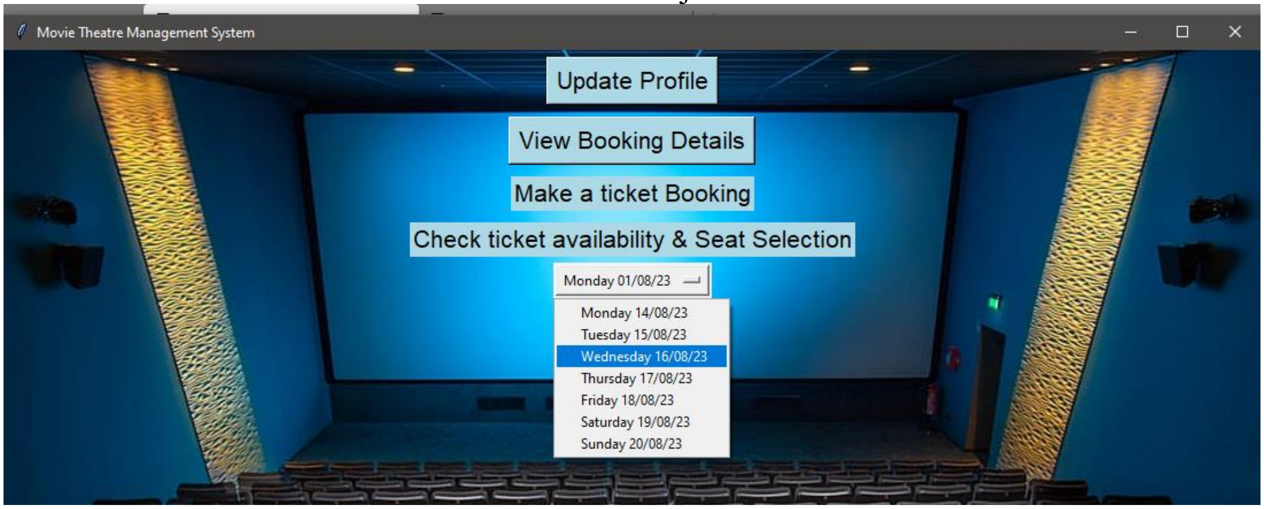
Email Address: Waylon_Smithers@simpsons.com

Age: 16

Password: *********

Confirm Password: *********

Check Availability & Make Booking:


Movie Theatre Management System
Update Profile
View Booking Details
Make a ticket Booking
Check ticket availability & Seat Selection
Monday 01/08/23
Monday 14/08/23
Tuesday 15/08/23
Wednesday 16/08/23
Thursday 17/08/23
Friday 18/08/23
Saturday 19/08/23
Sunday 20/08/23