Software Design Specification

Software Title

- Movie Theater Ticketing System (MTTS)

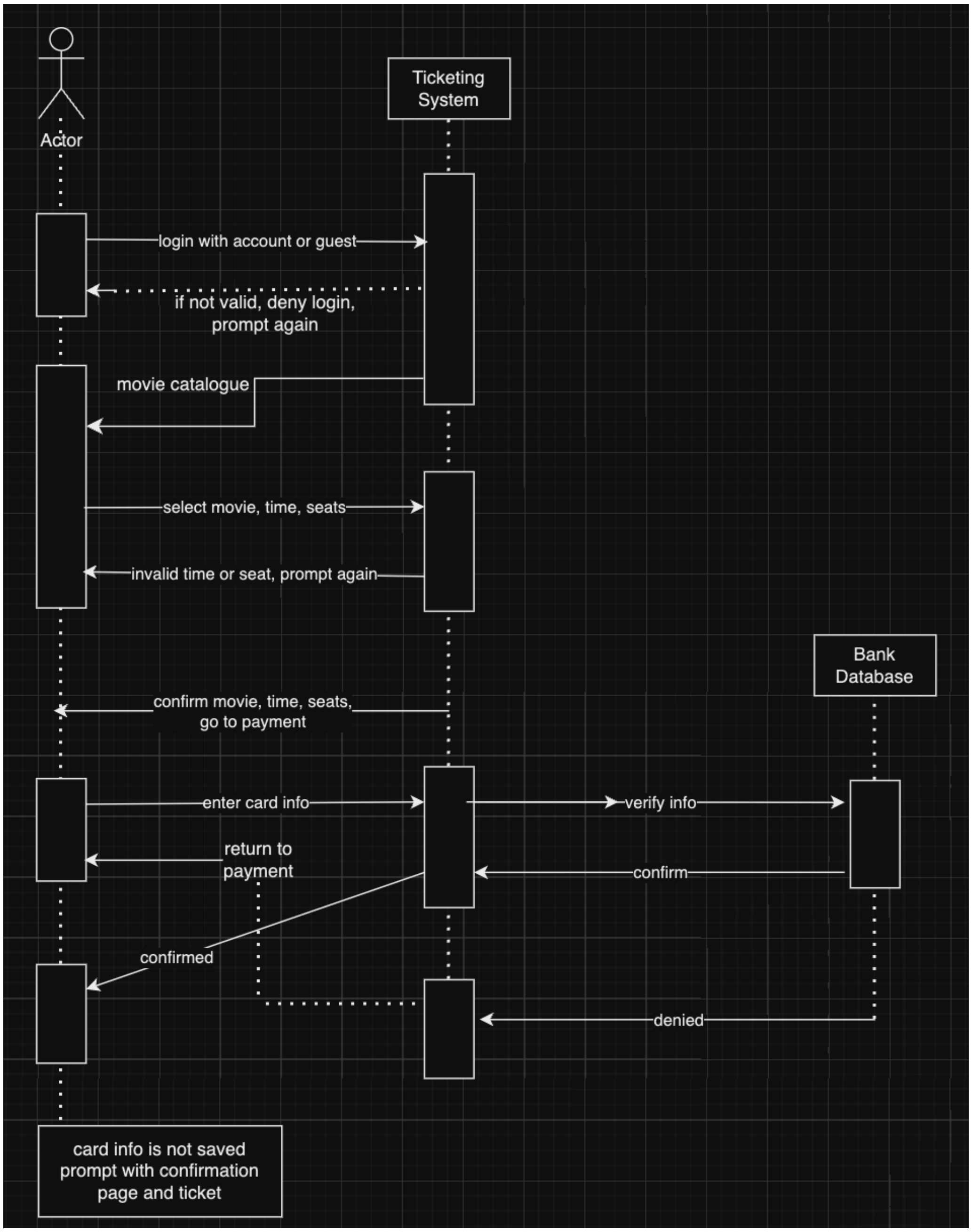
Team Members

- Tim
- Ben
- Jahnavi

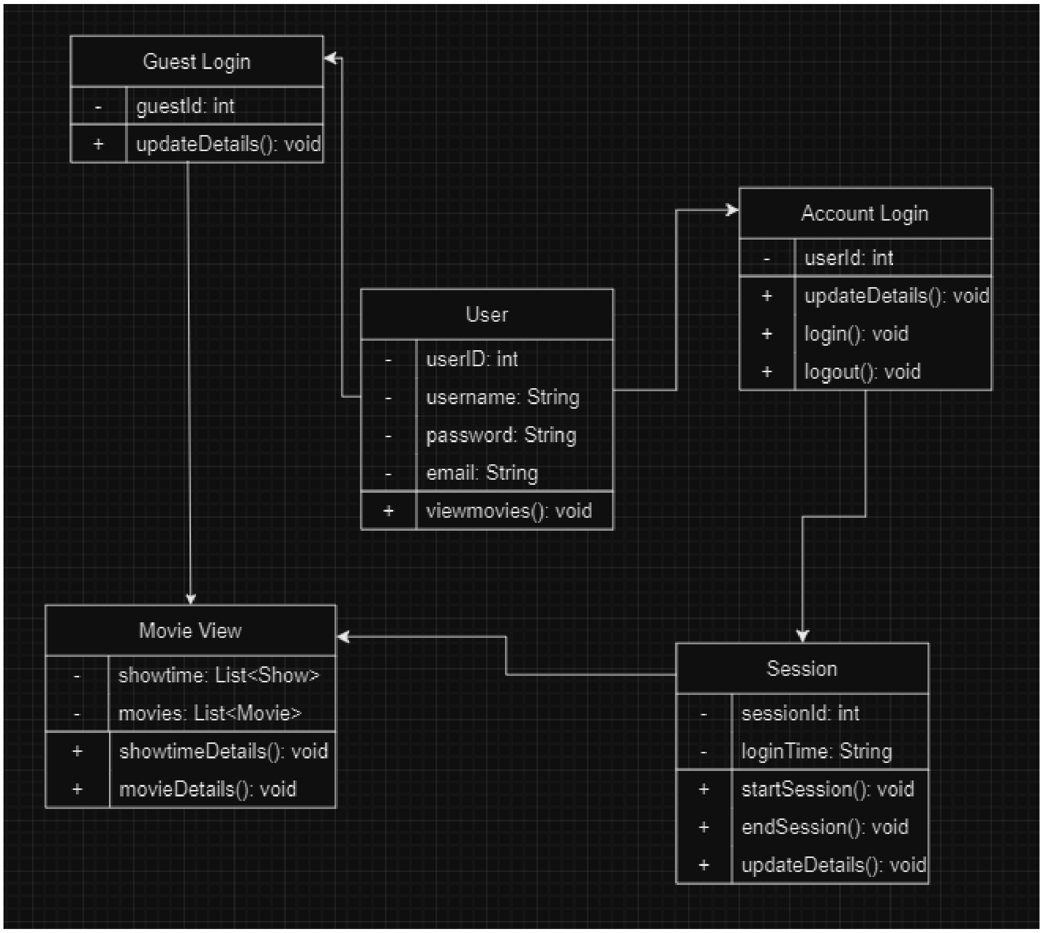
System Description

- The system allows customers to buy movie tickets online via accessing our website.
- The system allows smooth transactions between the customer and its designated bank service.
- The system keeps track of all necessary logs and receipts of transactions in case issues arise in the future.
- The system authenticates valid users by providing authentication tokens if account credentials are verified.
- The system does not hold card information due to security reasons.
- The system implements AWS Sage Maker to detect potential fraud transactions.

Software Architecture Overview

- Architectural Diagram of all Major Components
  - 
Actor
Ticketing System
Bank Database
login with account or guest
if not valid, deny login, prompt again
movie catalogue
select movie, time, seats
invalid time or seat, prompt again
confirm movie, time, seats, go to payment
enter card info
verify info
return to payment
confirm
confirmed
denied
card info is not saved prompt with confirmation page and ticket

- UML Class Diagram

    - 

- Description of Classes
    - Stores information for the userID as an integer, stores the username and password as a string and calls viewmovies() method for the movie view class.

    - It branches to the Guest Login class when user info is not provided or goes to account login where it takes the userID and calls updateDetails() method to update info for the userID. Then calls login() or logout() depending on user input, which will log the user in or out.

    - After Account login it goes to session class where it contains the sessionID and loginTime which goes into the updateDetails(). startSession() info is recorded into the updateDetails() and endSession() will call logout().

    - The Movie View class is then called, which contains the showtime and movie lists and provides details for those lists through showtimeDetails() and movieDetails().

- Description of Attributes
  - Idle State: Welcome! Please log in to select your movie
    - Idle state leads to movie selection and movie time selection, if an error occurs it gets returned to the movie selection state.
  - Select Movie Time State:
    - Select Movie Time State leads to confirming selection and choosing seats, if an error occurs it goes back to choosing seats.
  - Choose seats state:
    - Choosing a seat state leads to confirming seat selection and selecting payment method, if an error occurs, it goes back to selecting payment method.
  - Select Payment state
    - Leads to confirmation, and sending payment info to the bank database, if an error occurs it resends to the bank database.
  - Payment going to bank state
    - Leads to confirmation, which leads to end, which results in going back to idle state.
- Description of Operations
  - Log-in / Guest
    - Users input the following information if they have an account: username and password.
    - Users bypass the login page if they click the “Login as Guest” button.
    - Assuming the user has an account, their account will be authenticated by the Account Management Server (AMS). If provided credentials are verified, an authentication token will be given to the user.
    - All of the traffic logs will be sent and stored in the Centralized Log Server (CLS).
  - Request Ticket
    - Users input the following information to buy a ticket/s: movie, time, location, and seat.
    - Those data will be sent to the Movie Management Server (MMS) to verify movie availability for the allotted data.
    - All of the traffic logs will be sent and stored in the Centralized Log Server (CLS).
  - Payment Process
    - Users input the following information: card number, full name, CVV, expiry date, and address.

- These encrypted data will first be sent to the AWS Sage Maker Server to check for potential frauds. If detected, it will automatically deny payment and its log will be sent to the IT department.
- All of the traffic logs will be sent and stored in the Centralized Log Server (CLS).
- If it passes the potential fraud detection process, it will then be sent its encrypted data to the Designated Bank Server where the payment process will be held.
- Once the bank approves the transaction, its receipt will be sent and stored in the Transaction Records Server (TRS) and it will be linked to the AMS of the account who purchased it.
- All of the traffic logs will be sent and stored in the Centralized Log Server (CLS).

Development Plan and Timeline

- Tim
    - Designs Data Flow Diagram (DFD)
- Ben
    - Designs Sequence Diagram
    - Designs UML Class Diagram
- Jahnavi
    - Designs State-Transitions Diagram (STD)