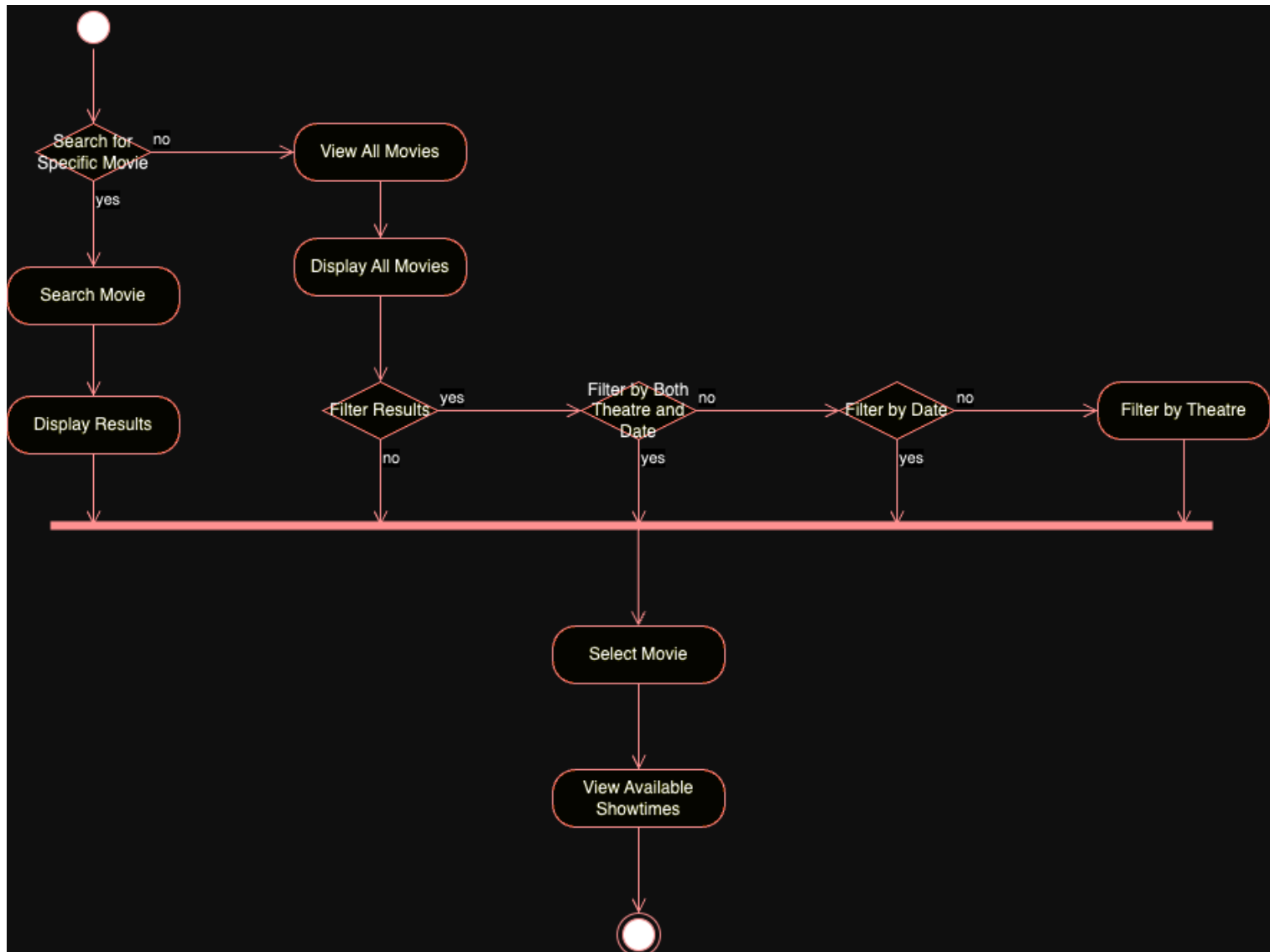


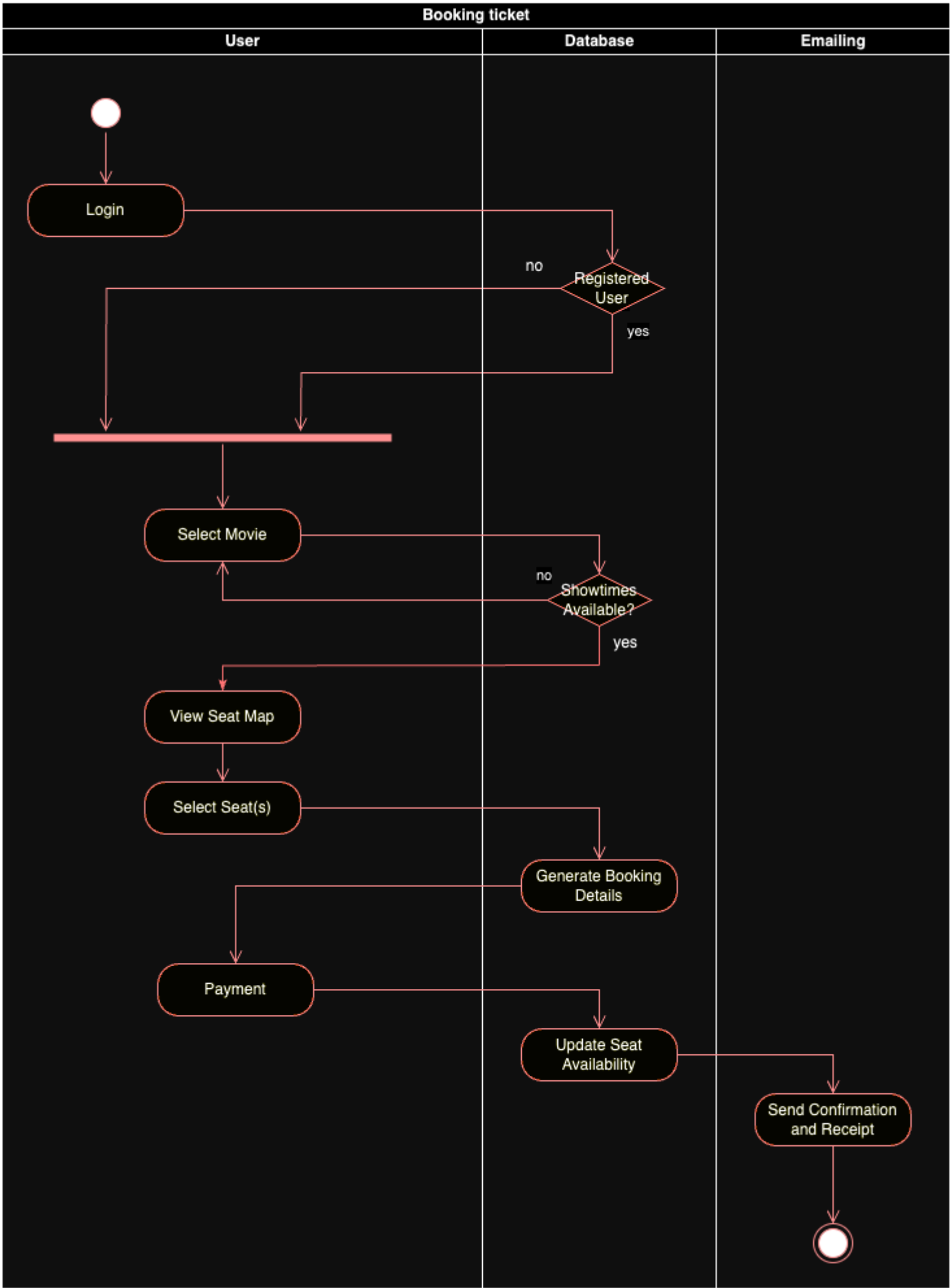
Notes & Documentation

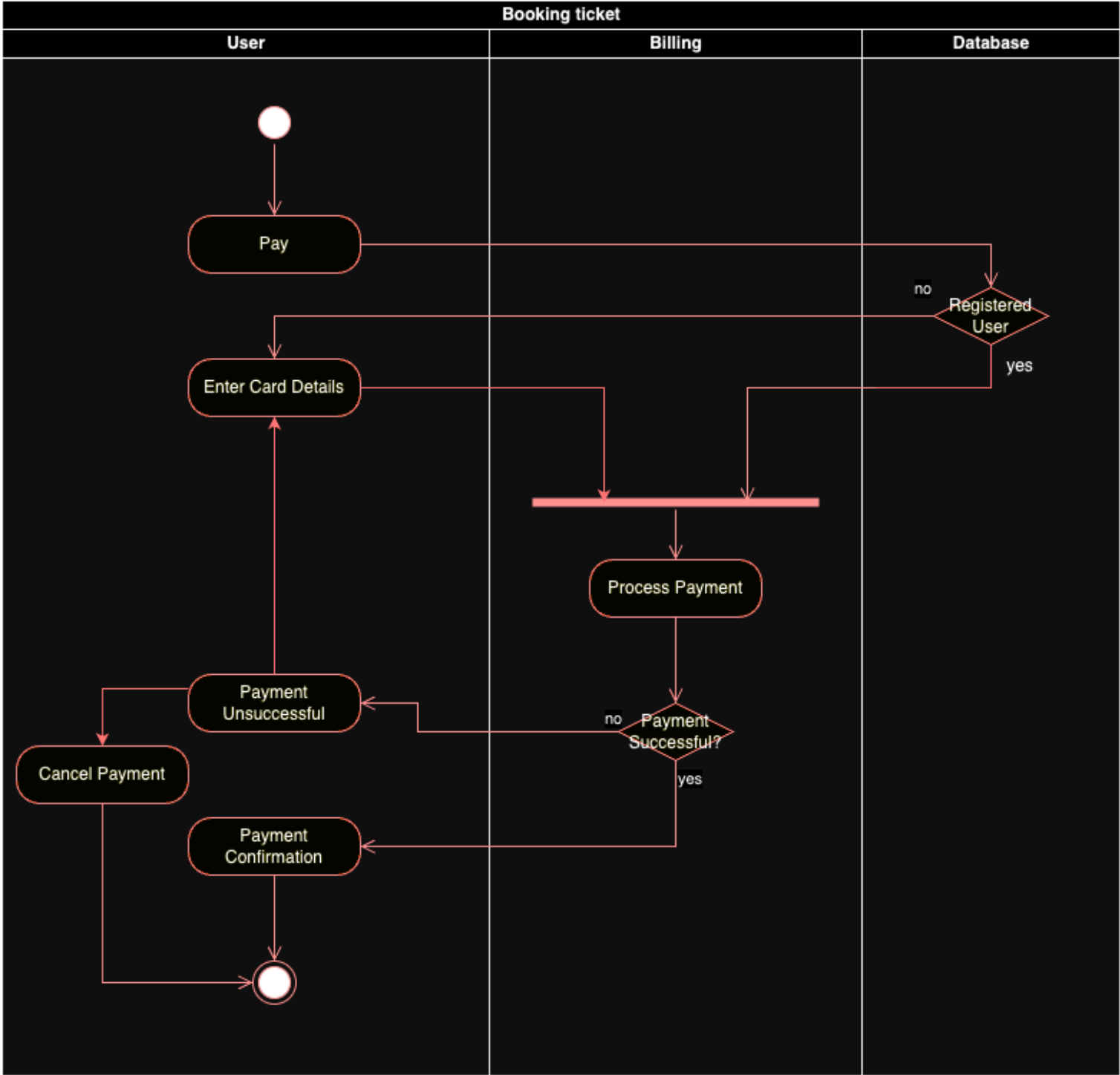
CHLOE

Description:

The Movie Theatre Ticket Reservation App for AcmePlex allows users to search and browse available movies, view available showtimes and seats, purchase tickets, and manage their booking. The system is used by both ordinary users, who can book and cancel tickets for up to 72 hours before the show with a 15% administrative fee, and registered users, who pay a \$20.00 annual fee for early access to movie news and are exempt from the cancellation fee. The system features graphical seat selection, secure payment processing, email notifications for both tickets and receipts and account management for registered users. The system is implemented in Java with SQL for the database, focusing on a single theatre.





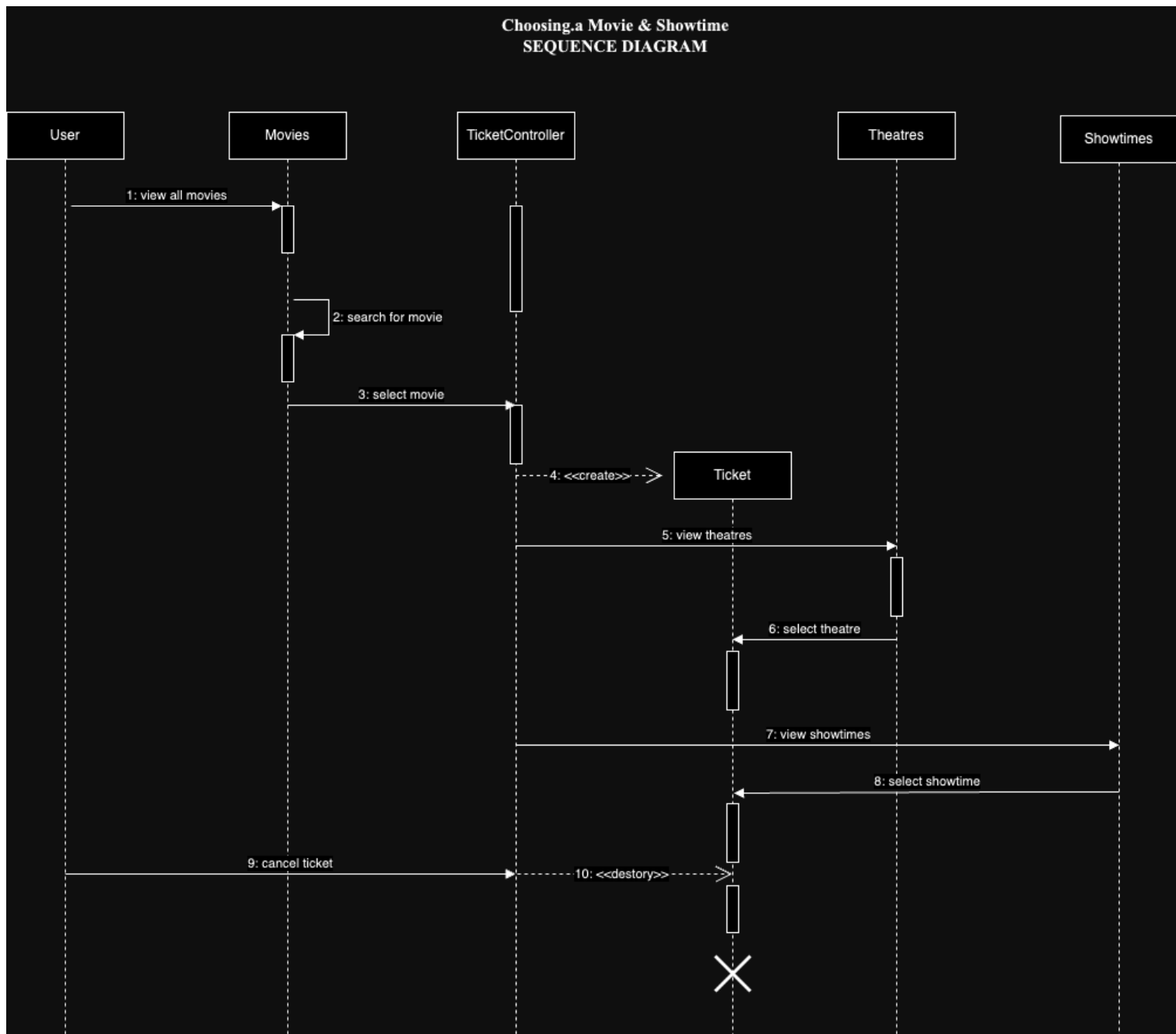


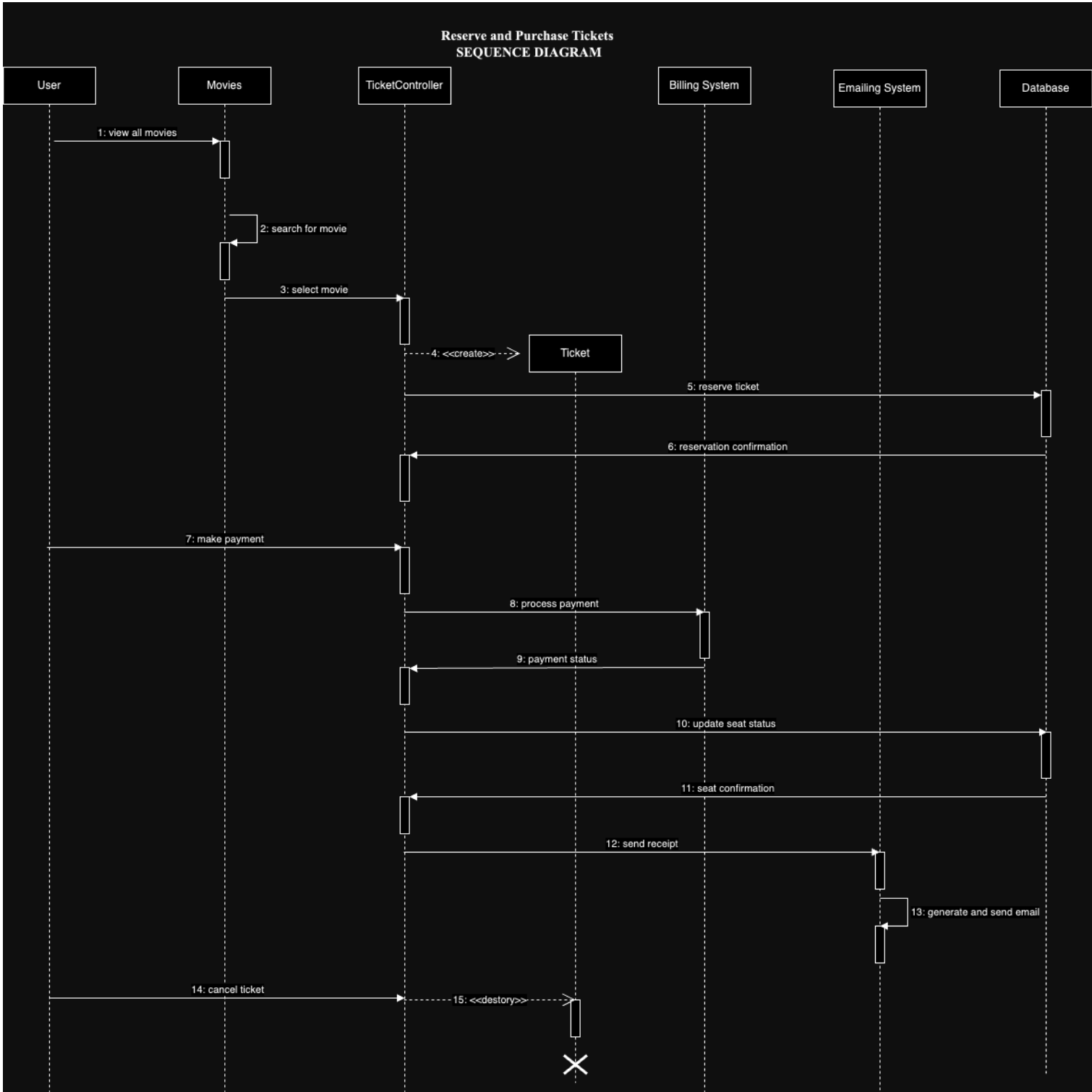
```
classDiagram
    class Movie {
        <<entity>>
        -movieId: int
        -title: String
        -genre: String
        -showtimes: List<Showtime>
        +searchMovie(title: String): List<Movie>
        +displayDetails(): void
    }
    class Showtime {
        <<entity>>
        -showtimeId: int
        -movie: Movie
        -time: datetime
        -availableSeats: int
        +displayShowtimes(movie: Movie): List<Showtime>
        +getAvailableSeats(): int
        +bookSeats(seat: int): boolean
    }
    class Ticket {
        <<entity>>
        -ticketId: int
        -userId: int
        -price: float
        -seats: List<Seat>
        -theatre: Theatre
        -movie: Movie
        -time: Showtime
        -purchaseDate: datetime
        -isCancelled: boolean
        +getTotalPrice(): float
        +printTicket(): void
        +cancelTicket(): bool
    }
    class Theatre {
        <<entity>>
        -theatreId: int
        -name: string
        -location: string
        -totalSeats: int
        -availableSeats: int
        -showtimes: List<Showtime>
        +addShowtime(showtime: Showtime): void
        +removeShowtime(showtimeId: int): void
        +getAvailableSeats(): int
        +displayShowtimes(): List<Showtime>
    }
    class Payment {
        <<entity>>
        -paymentId: int
        -ticket: Ticket
        -userId: int
        -amount: float
        -paymentMethod: string
        +processPayment(): boolean
        +sendReceipt(): void
        +refund(): boolean
    }
    class Seat {
        <<entity>>
        -row: char
        -column: int
        -available: boolean
        -theatre: Theatre
        +reserve(): boolean
        +cancel(): boolean
    }
    class RegisteredUser {
        <<entity>>
        -joinedDate: datetime
        +accessEarlyReleaseMovies(): List<Movie>
        +reserveSeats(showtime: Showtime, seats: List<Seat>): bool
    }
    class User {
        <<entity>>
        -userId: int
        -name: string
        -email: string
        -phone: string
        -password: string
        -isRegistered: boolean
        -cardNumber: string
        -cardExpiry: string
        -accountFeePaid: boolean
        -credits: float
        +register(): boolean
        +login(email: string, password: string): boolean
        +logout(): void
        +payAccountFee(): boolean
        +searchMovie(title: String): List<Movie>
        +viewCredits(): float
    }
    class MovieBookingSystem {
        <<control>>
        +login(user: User): boolean
        +searchMovie(title: string): List<Movie>
        +bookTicket(user: User, showtime: Showtime, seats: List<Seat>): Ticket
        +cancelBooking(ticket: Ticket): boolean
        +displayMovies(): List<Movie>
        +addCredits(user: User, amount: float): void
    }

    Movie "1..*" --> "1" Showtime
    Showtime "1" --> "*" Seat
    Ticket "1" --> "1" Showtime : assigned
    Ticket "1" --> "1" Theatre : issued by
    Ticket "1" --> "1" Payment : for
    Payment "1" --> "1" User : paid by
    Payment "1" --> "1" Ticket : books
    Seat "1" --> "1" Theatre
    RegisteredUser <|-- User
    MovieBookingSystem --> User
```

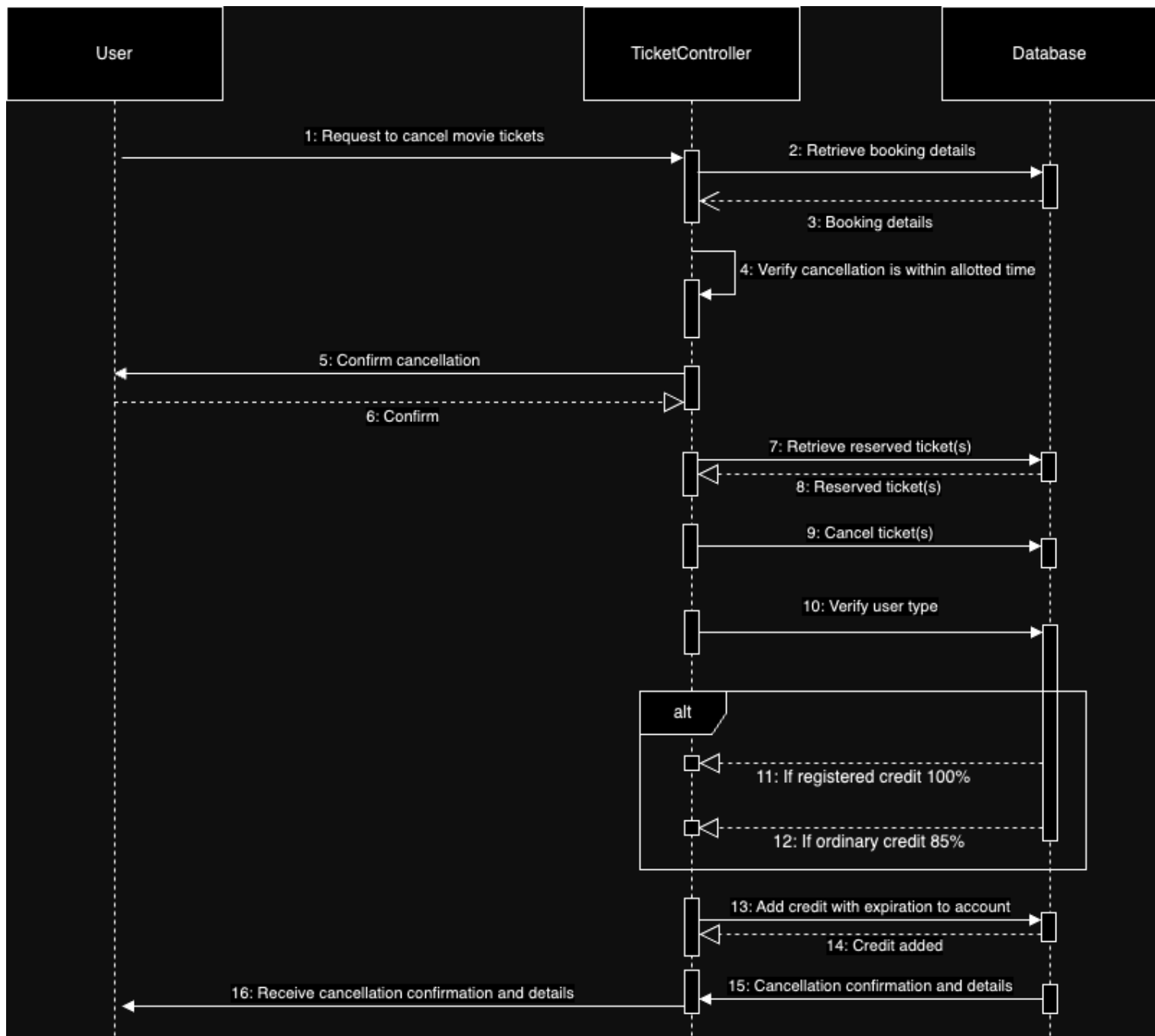
```
graph LR; Client[Client] ---|Private Network| WebServer[Web Server]; subgraph WebServer [Web Server]; PG1[Payment Gateway]; LR[Login/Register]; VM[View Movies]; SS[Select Seats]; end; WebServer ---|Local Network| EmailServer[Email Server]; WebServer ---|Internet| PG2[Payment Gateway]; WebServer ---|Local Network| SQLDB[SQL Database Server];
```

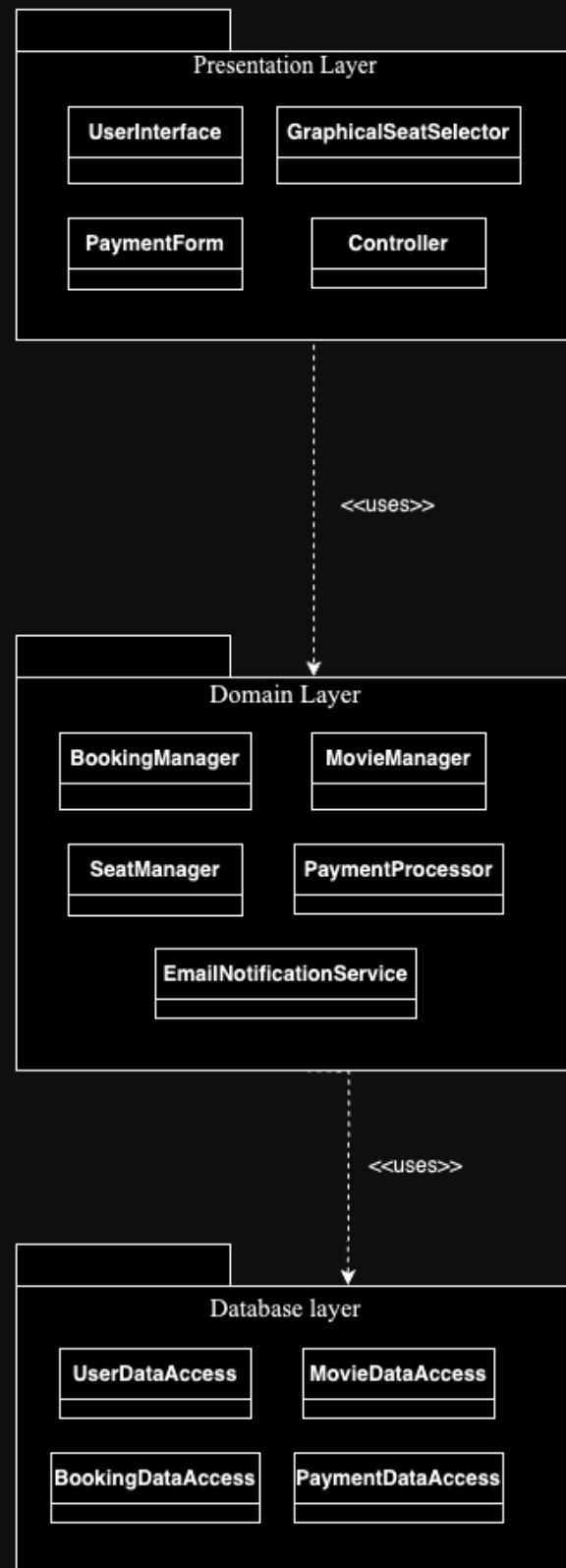
The diagram illustrates the network architecture for a movie booking system. A Client is connected to a central Web Server via a Private Network. The Web Server contains four internal components: Payment Gateway, Login/Register, View Movies, and Select Seats. The Web Server is connected to three external services: an Email Server via a Local Network, a Payment Gateway via the Internet, and an SQL Database Server via a Local Network.

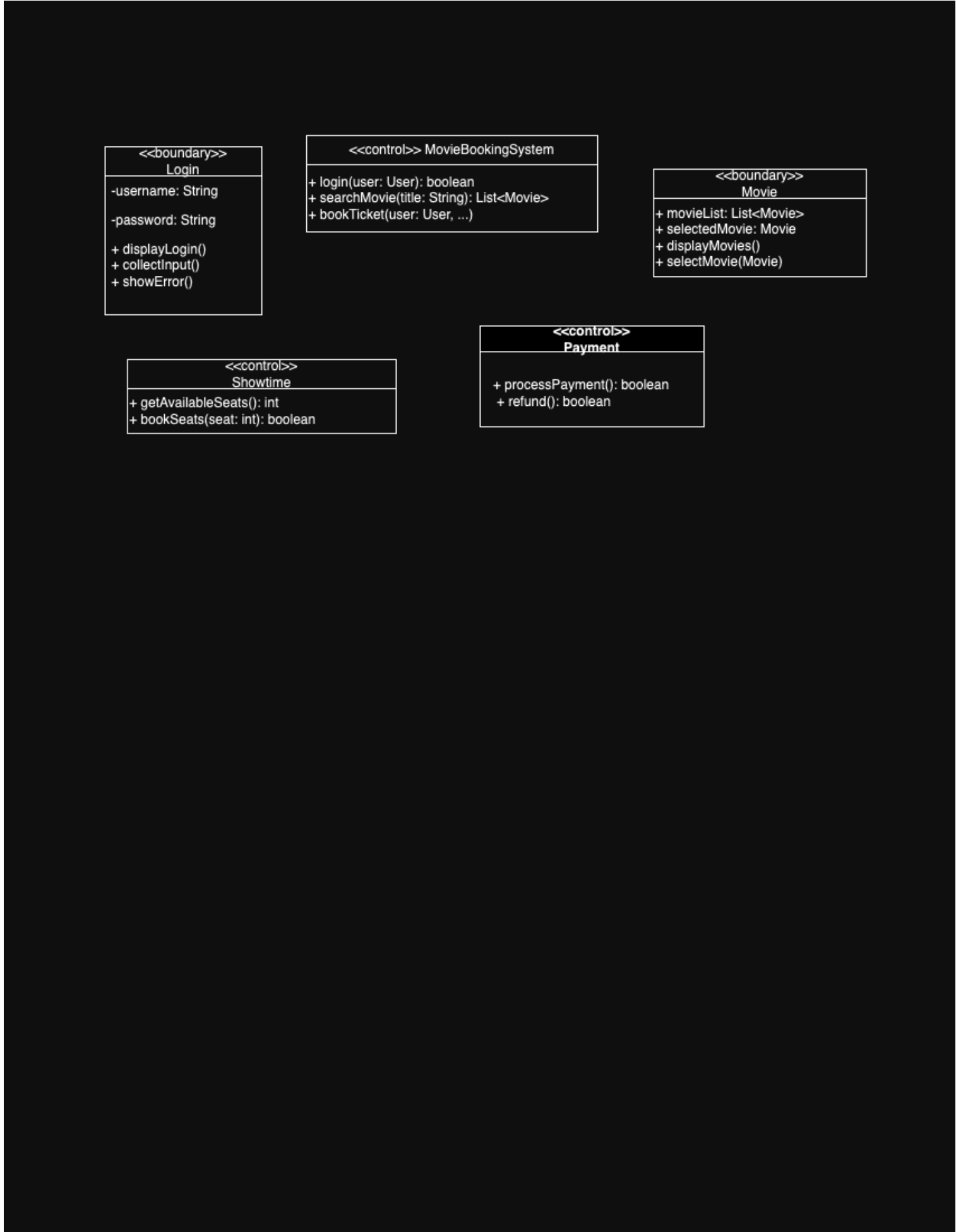




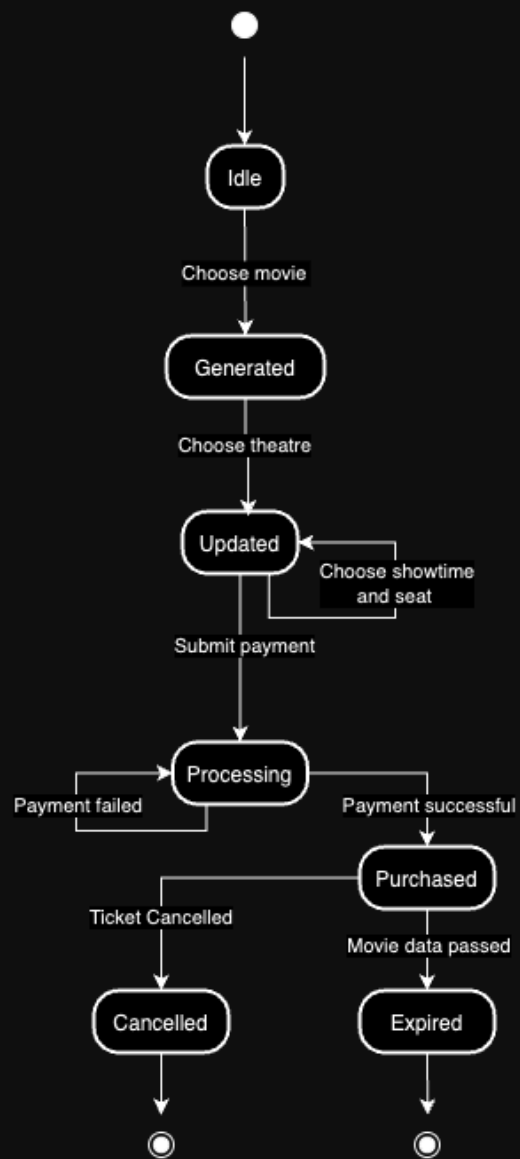
CHLOE



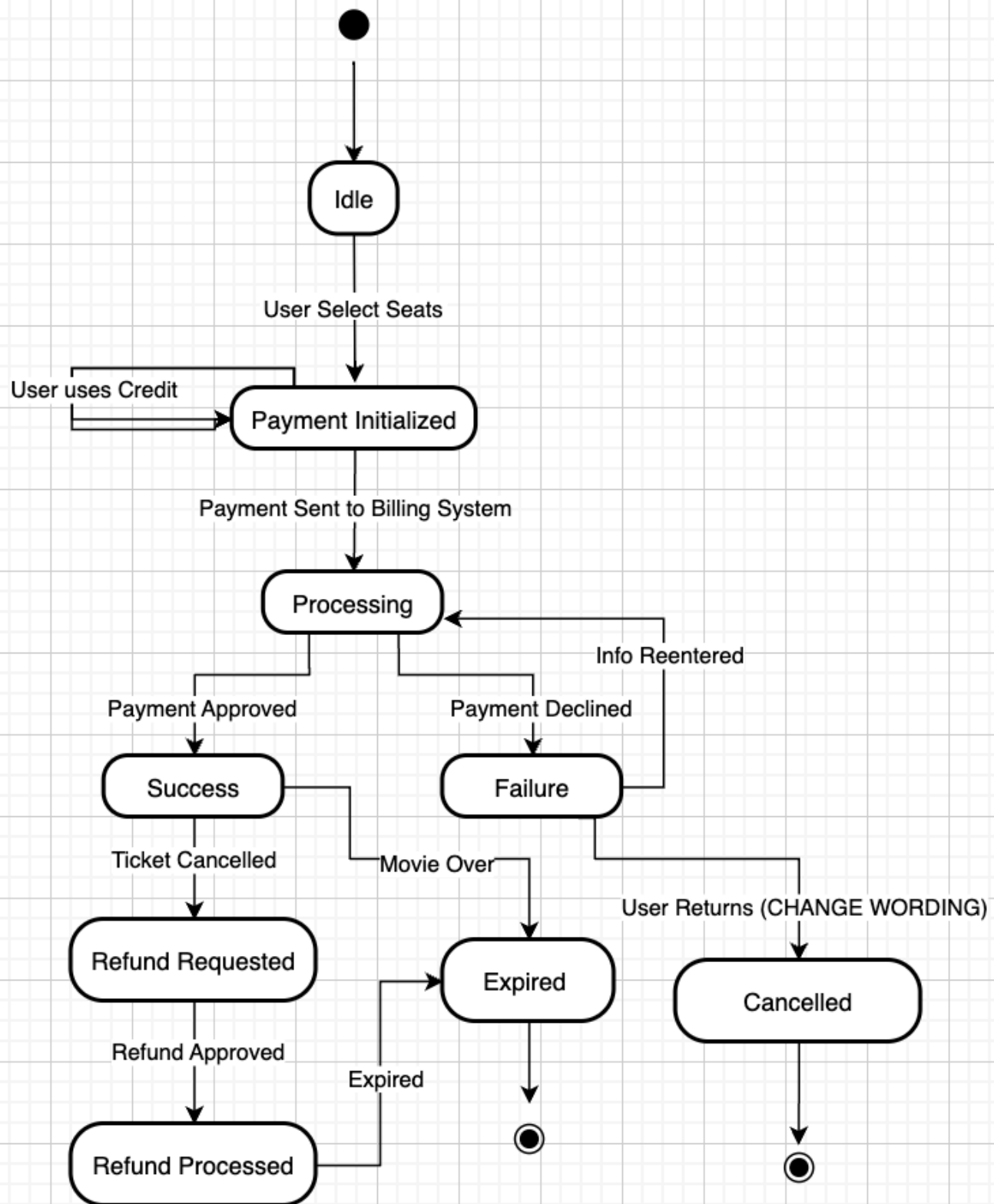




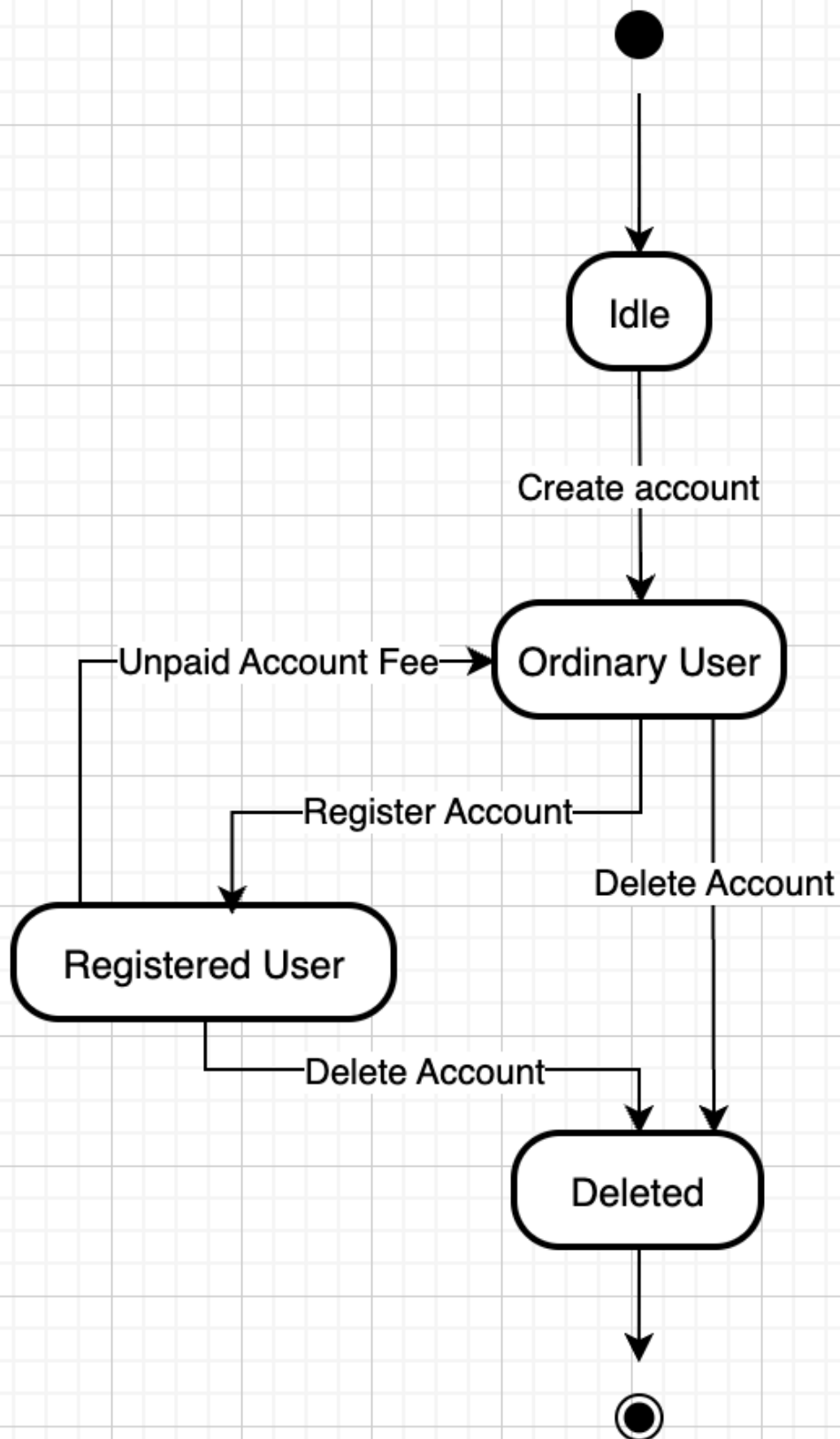
TICKET OBJECT



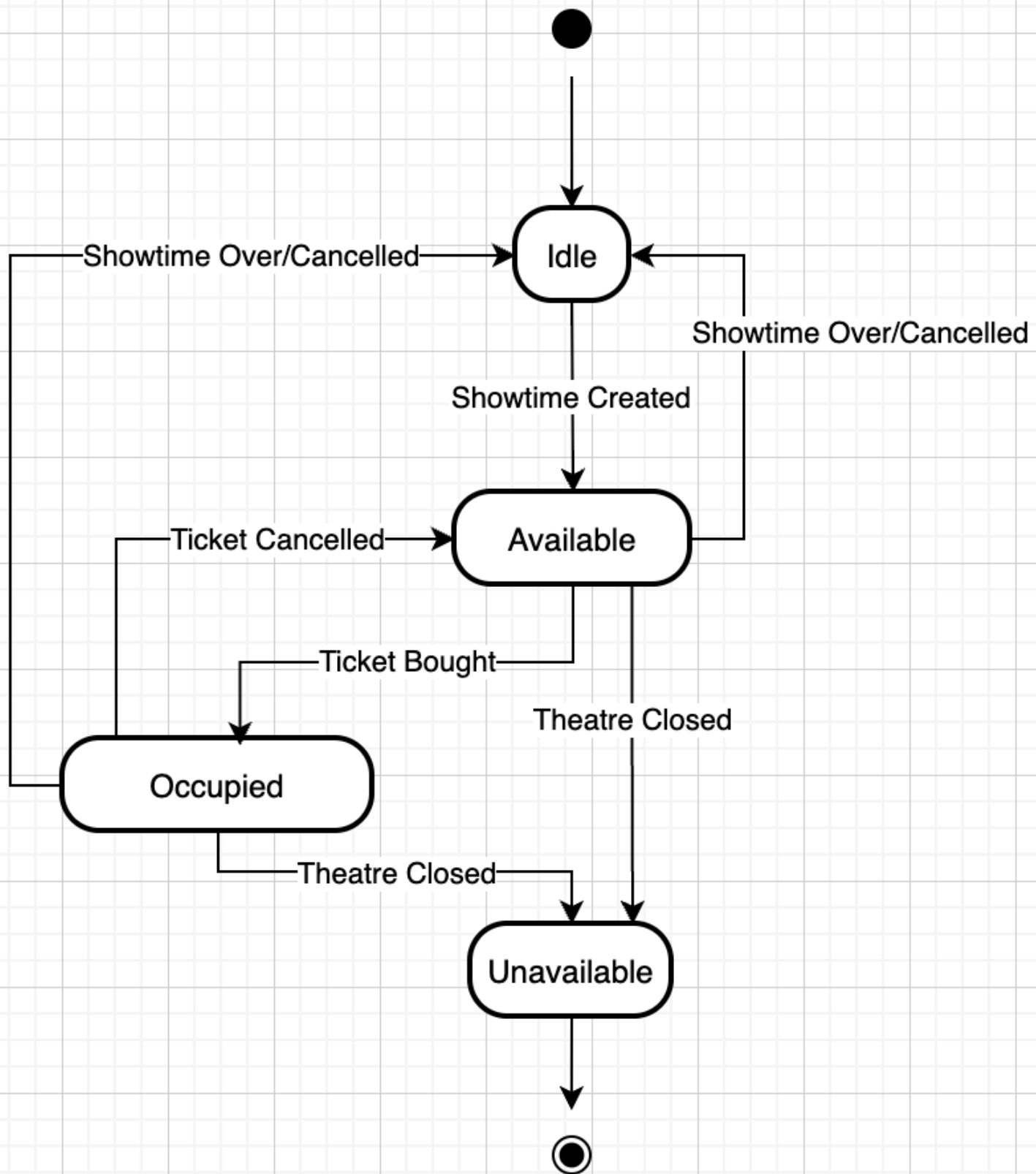
PAYMENT OBJECT

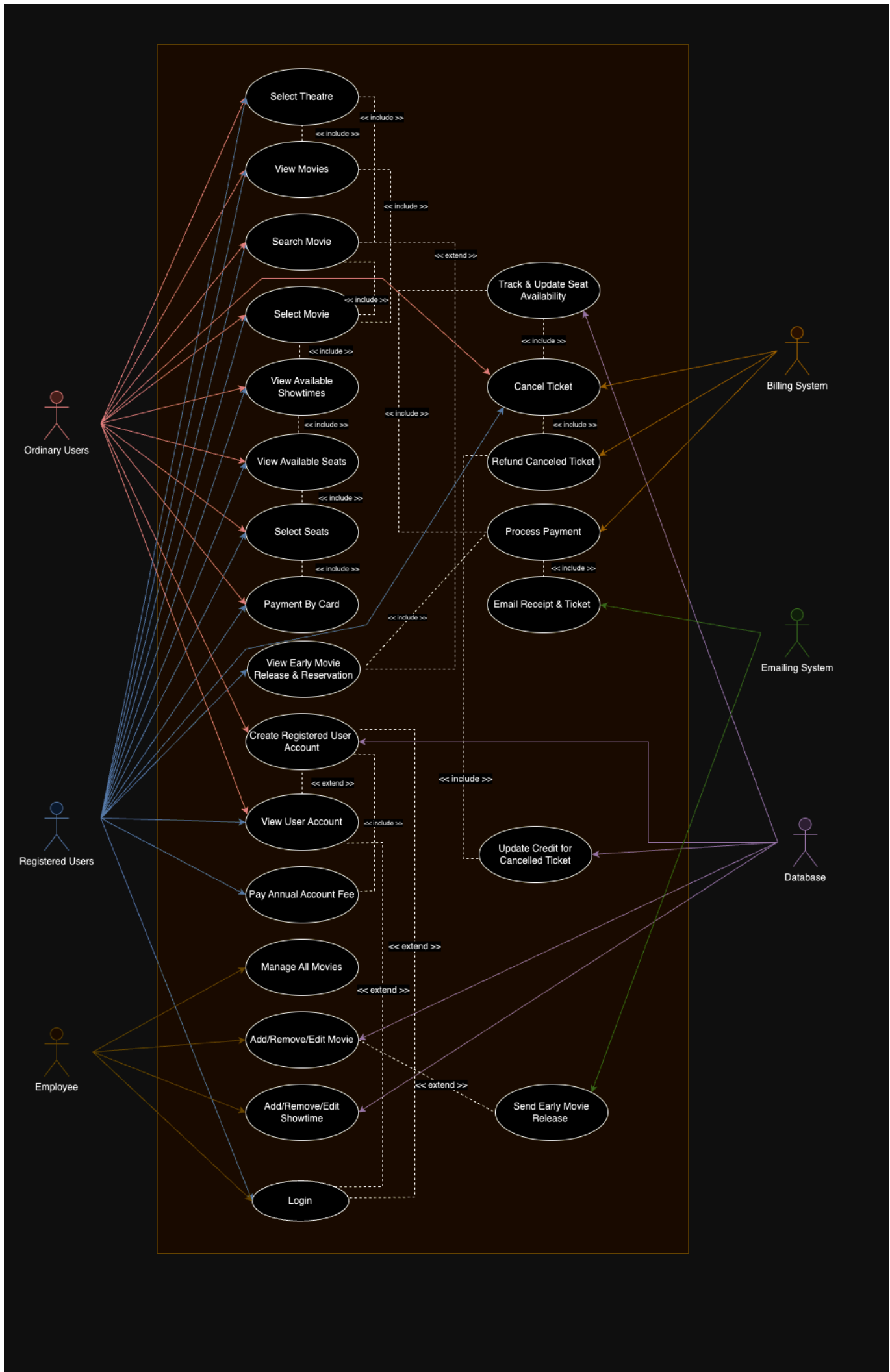


USER OBJECT



SEAT OBJECT





Use Case Scenarios:

Search Movie: User can search for a specific movie by entering a title in the search bar. The system responds to the search and will return a list of movies matching the search query.

Select Theatre: User can select a specific theatre from the Theatre page.

Select Movie: User can select movie from the movie list.

View Available Showtimes: User can view the available showtimes for a selected movie, displaying the schedule for different theatres

Select Showtime: User can select an available showtime from the showtime list for a selected movie

Select Seats: User can view a seat map for a selected showtime and choose the seats they want based on availability. Database will update the seatmap to account for the selected seat and update seat availability.

Make Payment: To make a payment, Ordinary User enters their payment information – name, email, and credit card number to complete the ticket purchase. Registered Users are presented with the option to use their stored banking information. Payment information is validated and processed securely by the Billing System, and the booking is confirmed.

Cancel Ticket: Ordinary Users may cancel a booked ticket by providing ticket ID up to 72 hours before the showtime and receive credit with a 15% administrative fee for future purchases with a one year maximum expiration date. If the cancellation is specified within the allowable timeframe, the refund is processed per the cancellation policy by the Billing System. A Registered User can cancel a ticket with no administrative fee, and will receive a complete refund if canceled within the specified time frame.

Reserve Seats: Registered Users may access the early reservation feature for upcoming movie releases and secure their desired seats ahead of time. However, only 10% of seats per showtime can be reserved by Registered Users before public announcements, based on a first-come-first-serve policy.

Edit Movie Details: Employees can modify details such as title, genre, release date, and showtimes for an existing movie. Once modifications are complete, they are saved and reflected to the database

Add Movie: Employees can add a new movie to the database.

Remove Movie: Employees can remove an existing movie from the database

Send Ticket Receipt/Ticket Cancellation Email: Upon purchase of a ticket, Users will receive an email with their ticket purchase receipts and virtual e-ticket. Upon successful cancellation of a ticket, Users will receive an email confirming the cancellation. The Emailing System will send the ticket receipt and cancellation emails to the User.

Send Early Movie Release Email: Registered Users will receive emails regarding new movie announcements for early reservation.

View Purchase Summary: Once payment for a ticket is successfully processed, a summary of the purchase details are displayed.

Register Account: An Ordinary User may sign up or register for an account to become a Registered User by providing the following details: username, email, password, and payment information. Once registered, the Registered User's information is saved to the database.

Login: A Registered User may login if they have an existing account when using the movie application.

View Account: Once logged in, a Registered User may view their account information by clicking the Account button which redirects them to the Account page.

Pay Annual Fee: Registered Users must pay a £20.00 annual account fee by viewing their account details and selecting the option to pay their account fee. The billing system processes and validates the payment. Once paid, the database will update and save the account fee paid status.