

Practical 5

Draw the Sequence Diagram for the project definition.

Sequence Diagram

A **Sequence Diagram** is a type of interaction diagram in the Unified Modeling Language (UML) that depicts how objects interact in a given scenario of a system. It shows the sequence of messages exchanged between different system components over time. Sequence diagrams are particularly useful for understanding real-time processes, system execution flow, and interactions between users, systems, and databases.

– Importance of Sequence Diagrams

- **Understanding System Behavior:** Sequence diagrams illustrate how components interact dynamically, helping to analyze the system's workflow.
- **Clarifying Use Case Execution:** They provide a step-by-step visual representation of how use cases are implemented, ensuring that all interactions are well-defined
- **Enhancing Communication:** Helps stakeholders, developers, and system designers visualize system interactions clearly, improving collaboration and reducing misunderstandings.
- **Identifying Potential Issues:** Helps in detecting potential bottlenecks, inefficiencies, or missing interactions in the system.
- **Supporting Software Development:** Acts as a blueprint for developers by detailing system behavior before implementation.

– Components of a Sequence Diagram

- **Actors:** Represent users or external systems interacting with the system.
- **Lifelines:** Denote the existence of an object throughout the interaction.
- **Messages:** Arrows that represent the communication between objects, including synchronous, asynchronous, and return messages.

- Activation Bars: Indicate when an object is active and performing an action.
- Alternative/Conditional Blocks: Define optional or alternative flows within the sequence.
- Loops and Iterations: Represent repeated processes or interactions.

Sequence Diagrams for Movie Booking Management System

– Booking a Movie Ticket & Payment Processing

This sequence diagram illustrates the movie ticket booking process along with payment handling. The process involves interactions between the user, booking system, cinema system, and payment gateway.

Process Breakdown:

1. Movie Selection:

- The user searches for a movie in the booking system.
- The system checks showtime availability with the cinema system.
- If available, the system confirms availability to the user.

2. Seat Selection & Payment Initiation:

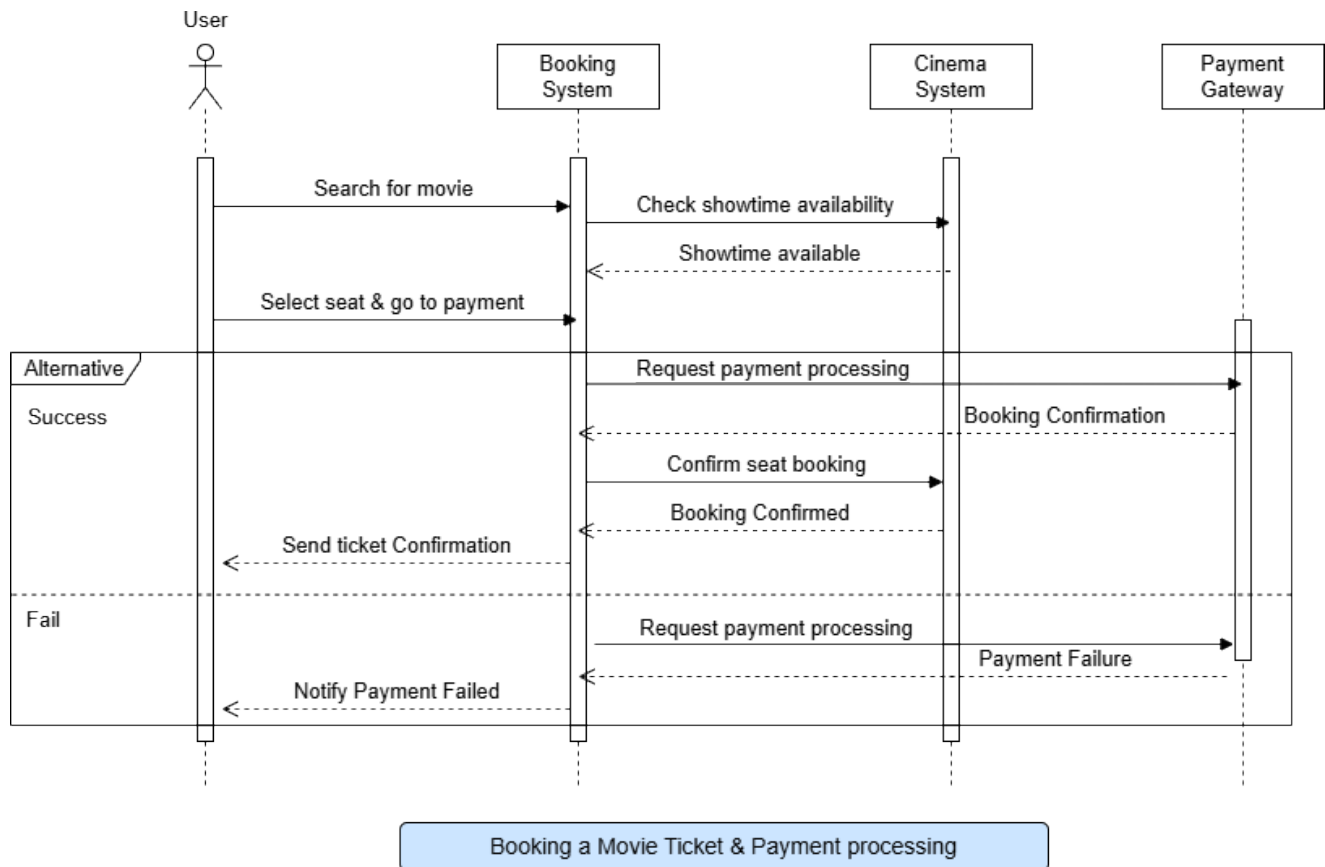
- The user selects a seat and proceeds to payment.
- The booking system requests payment processing via the payment gateway.

3. Seat Booking Confirmation:

- If the payment is successful, the cinema system confirms seat booking.
- The system sends a ticket confirmation to the user.

4. Alternative Flow (Payment Failure):

- If payment fails, the booking system notifies the user.
- The user can retry payment or select another payment method.



– Admin Login & Updating Movies

This sequence diagram represents how an admin interacts with the system to manage the movie database.

Process Breakdown:

1. Admin Authentication:

- The admin logs into the system.
- The system validates credentials with the database.
- If authentication is successful, access is granted.

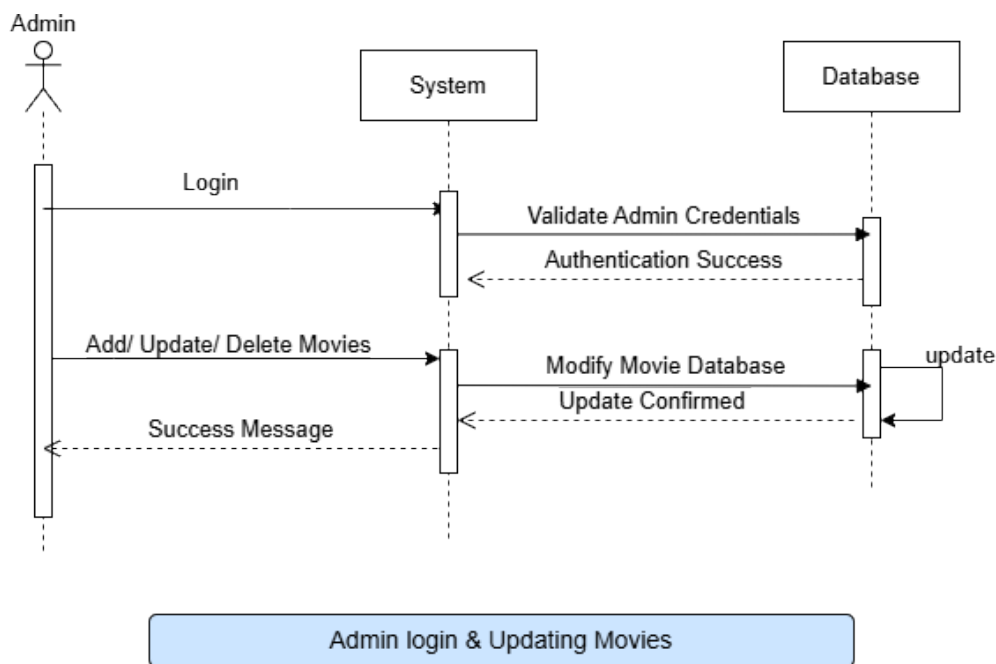
2. Movie Management Actions:

- The admin can add, update, or delete movies in the system.
- The system modifies the movie database accordingly.

3. Confirmation & System Response:

- Once the changes are applied, the system updates the database.

- A success message is sent to the admin confirming the action.



– View Bookings & Cancel a Booking

This sequence diagram details the process of viewing bookings and canceling a movie ticket.

Process Breakdown:

1. View Booking Details:

- The user requests to view their bookings.
- The booking system fetches booking history from the database and displays it.

2. Ticket Cancellation Request:

- The user selects a ticket to cancel.
- The booking system retrieves booking info from the database.
- The booking system marks the booking as canceled.

3. Refund Processing (If Applicable):

- The system processes a refund through the payment gateway (if required).
- Refund confirmation is sent to the user.

4. Final Confirmation:

- The system updates booking status and sends a cancellation confirmation to the user.

This ensures a seamless ticket cancellation and refund process for the user.

