System Requirements Specification (SRS)

Hotel Booking System

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1. Introduction

1.1 Purpose

The Hotel Booking System is a web-based platform that simplifies hotel reservations for travelling guests, hotel management staff, and travel agents. The system provides a user-friendly interface to search, book, and manage reservations while giving hotel management real-time operational tools.

1.2 Scope

- **Users:**
    - **Guests:** Search, book, and manage their stays.
    - **Hotel Management/Staff:** Update room availability, manage bookings, and generate reports.
    - **Travel Agents:** Facilitate group or corporate bookings with flexible rates.
- **Core Features:**
    - Hotel search & filtering
    - Secure booking & payment processing
    - Booking management (modify/cancel/ upgrade)
    - Feedback and review system
    - Administrative tools for reporting and inventory control

1.3 Development Methodology

The project follows Agile principles using the Scrum framework with iterative development, continuous stakeholder feedback, and collaboration via tools like Trello and GitHub.

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2. System Functional Requirements

The system will support the following functionalities:

- **Search & Filter:**
  - Locate hotels by location, date, and preferences (e.g., amenities, price, rating).
- **Reservation Engine:**
  - Enable secure room bookings with real-time availability and pricing.
  - Support selection of additional services (room services, pick and drop).
- **Booking Management:**
  - Allow guests to view, modify, or cancel reservations.
  - Send notifications on booking changes.
- **Payment Integration:**
  - Process payments securely via multiple payment options.
  - Notify the Hotel Management and Guests on payment confirmation
- **User Accounts:**
  - Manage personal profiles, view booking history, and participate in loyalty programs for guests.
  - Display the success rate and booking history of the travel agents.
- **Administrative Tools:**
  - Provide dashboards for hotel staff to update room availability, adjust prices, manage inventory, and generate detailed reports.
- **Feedback System:**
  - Enable guests to submit reviews and ratings (with optional attachments–pictures, videos).

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3. System Non-Functional Requirements

3.1 Product Requirements

- **Performance:**
  - Pages load within 2.5 seconds under normal conditions.
- **Reliability:**
  - System uptime of at least 99.5% monthly.
- **Scalability:**
  - Support a growing user base without performance degradation.
- **Security:**
  - Adhere to industry standards (e.g. GDPR) for data and payment processing.
- **Usability:**
  - Provide an intuitive, accessible interface on both desktop and mobile devices, and across multiple platforms– apple, android.
- **Maintainability:**
  - Code must be modular, well‑documented, and easy to update.

3.2 Organizational Requirements

- **Development Methodology:**
  - Use Scrum Method for iterative delivery and continuous stakeholder feedback.
- **Collaboration Tools:**
  - Utilize Trello for sprint tracking and GitHub for version control.
- **Team Roles:**
  - Clearly defined roles such as **Team Lead** (Ayaan Khan), **UI Designe**r (Ayaan Mughal), Requirement Analyst/Architect and **Developer** (Mishal Ali).

3.3 External Requirements

- **Legal and Regulatory:**
  - Comply with GDPR and other relevant data privacy regulations.
- **Payment Processing:**
  - Integrate with trusted payment gateways (e.g., Stripe, PayPal, EasyPaisa) that comply with PCI‑DSS.
- **Interoperability:**
  - Allow future integrations with external systems (e.g., travel agent systems).

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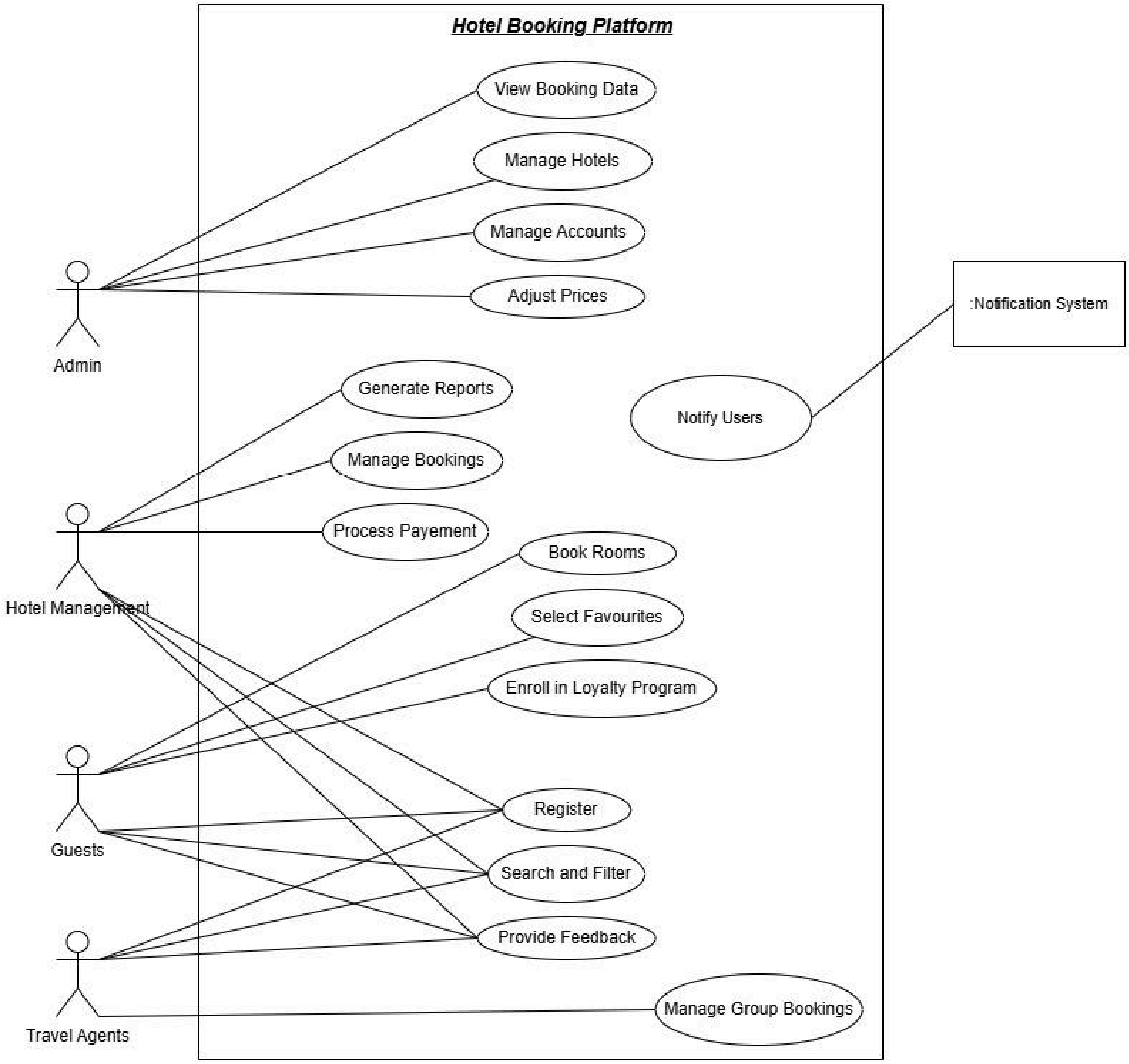
4. Use Case Diagram

Below is a use case diagram illustrating the overall main functionalities and interactions of the system:



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5. User Stories (with Pre- and Post-Conditions)

Using the use case diagram as a starting point, the use cases are converted to user stories listed below:

- **US01: Searching and Filtering Hotels**
  - **Role:** All Users
  - **Goal:** To search for hotels using criteria such as location, dates, and filters (e.g., price range, amenities).

  - **Reason:** To quickly and easily find the best accommodation.
  - **Pre-Conditions:**
    - User is on the home page with access to the search interface.
    - Valid search criteria are available (location, dates, etc.).
  - **Post-Conditions:**
    - A list of hotels matching the criteria is displayed.
    -
- **US02: Booking a Hotel Room**

  - **Role:** Guest
  - **Goal:** A guest books a room by selecting a hotel, choosing a room, entering booking details, and completing payment.
  - **Reason:** Confirm desired accommodation with personalized services if needed.
  - **Pre-Conditions:**
    - A hotel and room have been selected.
    - The hotel room is available.
    - Payment details are available.
  - **Post-Conditions:**
    - Booking is confirmed and a receipt is generated.
    -
- **US03: Managing Bookings**

  - **Role:** Hotel Management
  - **Goal:** To update, cancel and modify bookings of their respective hotels.
  - **Reason:** To avoid miscommunication or overburden at the hotel.
  - **Pre-Conditions:**
    - Hotel is there in the system.
    - Hotel Management is logged in the system.
    - Existing bookings are available.
  - **Post-Conditions:**
    - Booking changes are saved and a confirmation is sent.
    -
- **US04: Providing Feedback**

  - **Role:** All Users
  - **Goal:** To submit reviews and ratings for a successful booking and stay.
  - **Reason:** Enhance service quality and help future users.
  - **Pre-Conditions:**
    - Guest has completed a stay with a valid booking record, or Travel agent has successfully booked a group and Hotel Management is able to withhold these bookings .
  - **Post-Conditions:**
    - Feedback is recorded and linked to the respective booking.
    - Rating is updated.

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- **US05: Facilitating Group Bookings**

    - **Role:** Travel Agent
    - **Goal:** To manage bulk room reservations for a group of guests or its customers.
    - **Reason:** Efficiently arrange group or corporate bookings.
    - **Pre-Conditions:**
        - Travel agent is logged in and has provided group details.
        - Required number of rooms are available.
    - **Post-Conditions:**
        - Bulk booking is confirmed with individual room assignments if required and confirmation is sent to the agent.
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- **US06: Selecting Favourites/ Adding to the WishList**
    - **Role:** Guests
    - **Goal:** To select and save hotels or specific rooms for future bookings.
    - **Reason:** This reduces searching and filtering time for regular guests and provides an easier booking methodology.
    - **Pre-Conditions:**
        - Guests are logged into the system.
        - Required Hotel or room is available.
    - **Post-Conditions:**
        - Hotel/ Room is successfully added to the favourites tab.
        - Favourites can be accessed in the future.
        -
- **US07: Enrolling in Loyalty Program**
    - **Role:** Guests
    - **Goal:** Guests enroll in and participate in the loyalty program
    - **Reason:** To earn and redeem points or coupons for future bookings.
    - **Pre-Conditions:**
        - Guests are logged into the system.
        - Guests have at least used the system 4 times to be considered in the program
    - **Post-Conditions:**
        - Guest is successfully part of the Loyalty Program
        - Guests successfully get notified of special discounts and earn points.

- **US08: Register/ Login**
    - **Role:** All Users
    - **Goal:** Users authenticate themselves by logging in or create a new account through signup.
    - **Reason:** To book a room.
    - **Pre-Conditions:**

        - System should be running
        - Valid credentials should be entered.
    - **Post-Conditions:**
        - Users are notified of successful login.
        - Users are notified with a verification pin in case of sign up
        - Users can view the Homepage when successfully logged in.

- **US09: Notifying Users**
    - **Role:** System
    - **Goal:** System sends notifications to the users of specific actions or announcements.
    - **Reason:** To keep the users up-to-date and to provide security.
    - **Pre-Conditions:**
        - System should be running
        - Users should be logged into the system.
    - **Post-Conditions:**
        - Users are notified with email.

- **US09: Managing Rooms:** As an Admin, I want to add and manage rooms so that I can optimise usage and costs
    - **US09.1:** Allow detailed entry of new room information including type, price, capacity, and special features.
    - **US09.2:** Facilitate easy updates to existing room details to keep information current.
    - **US09.3:** Provide functionality to remove rooms that are no longer available or in service.

- **US10: Viewing Booking Data**
    - **Role:** Admin
    - **Goal:** To get detailed information for a selected booking record.
    - **Reason:** To view all relevant details of a specific booking, such as guest contact information, payment status, and any special requests.
    - **Pre-Conditions:**
        - The admin is logged into the system.
        - The booking record to be viewed exists in the system.
    - **Post Conditions:**

        - The admin is presented with a detailed view of the selected booking, including all associated metadata and transactional history.
        - The admin has the option to print, export, or update the booking details if required.

- **US11: Manage Hotels**
    - **Role:** Admin
    - **Goal:** To add, update, or remove hotel listings within the platform.
    - **Reason:** Ensure hotel information is current, accurate, and reflective of available inventory.
    - **Pre-Conditions:**
        - The admin is logged into the system.
        - The admin possesses the necessary permissions to modify hotel records.
    - **Post-Conditions:**
        - Hotel listings are updated in the database and reflected across the system.
        - Changes such as new entries, modifications, or deletions are logged and accessible for audit purposes.

- **US12: Manage Accounts**
    - **Role:** Admin
    - **Goal:** To add, update, or remove user accounts.
    - **Reason:** Ensure that account information is accurate, secure, and up-to-date.
    - **Pre-Conditions:**
        - The admin is logged into the system.
        - The admin possesses the necessary permissions to modify user accounts.
    - **Post-Conditions:**
        - The user account information is updated in the database.
        - Changes such as account creation, modification, or deletion are logged for audit purposes.

- **US13: Adjust Prices**
    - **Role:** Hotel Management
    - **Goal:** To modify room pricing based on seasonal trends, promotions, or occupancy rates.
    - **Reason:** Maintain competitive pricing, maximize occupancy, and manage revenue effectively.
    - **Pre-Conditions:**

        - The admin is logged into the system.
        - The current pricing data is accessible and editable by the admin.
    - **Post-Conditions:**
        - Updated pricing information is saved in the system and reflected across all booking channels.
        - A log entry is created for any price changes to maintain a history of adjustments.

- **US14: Generate Reports**
    - **Role:** Hotel Management
    - **Goal:** To generate comprehensive reports on bookings, revenue, occupancy rates, and other key performance metrics.
    - **Reason:** Enable hotel management to analyze operational performance, make data-driven decisions, and strategize improvements.
    - **Pre-Conditions:**
        - The system is connected to the relevant databases.
        - Hotel management is logged into the system.
        - Sufficient historical data exists to generate the required reports.
    - **Post-Conditions:**
        - Detailed reports are generated in the desired format and made available to hotel management.
        - Reports can be filtered or customized based on the selected criteria, providing actionable insights.

- **US15: Process Payment**
    - **Role:** Hotel Management
    - **Goal:** To process and verify payment transactions related to hotel bookings.
    - **Reason:** Ensure that all financial transactions are handled securely and accurately, maintaining the integrity of the hotel's financial records.
    - **Pre-Conditions:**
        - Hotel management is logged into the system.
        - Payment gateway integrations are active and functioning.
    - **Post-Conditions:**
        - Payment transactions are processed and recorded accurately in the system.
        - Successful transactions update booking statuses accordingly, while failed transactions trigger alerts for further review.
        - Detailed logs of all payment activities are maintained for auditing and reconciliation purposes.

- **US16: Express Check-In for Returning Guests**
    - **Role:** Guest
    - **Goal:** To check in online before arriving at the hotel, allowing them to skip the front desk and go straight to their room.
    - **Reason:**Saves time and enhances convenience for frequent travelers.
    - **Pre-Conditions:**
        - The guest has an existing confirmed booking.
        - The system can verify the booking and confirm identity via OTP (One-Time Password) sent via email/SMS.
        - If payment isn't fully settled, the guest must complete it before check-in
    - **Post-Conditions:**
        - The guest receives room access details (such as a digital key code or pickup instructions).
        - The hotel staff is notified of the guest's online check-in.
        - The guest can bypass the front desk and access their room directly.

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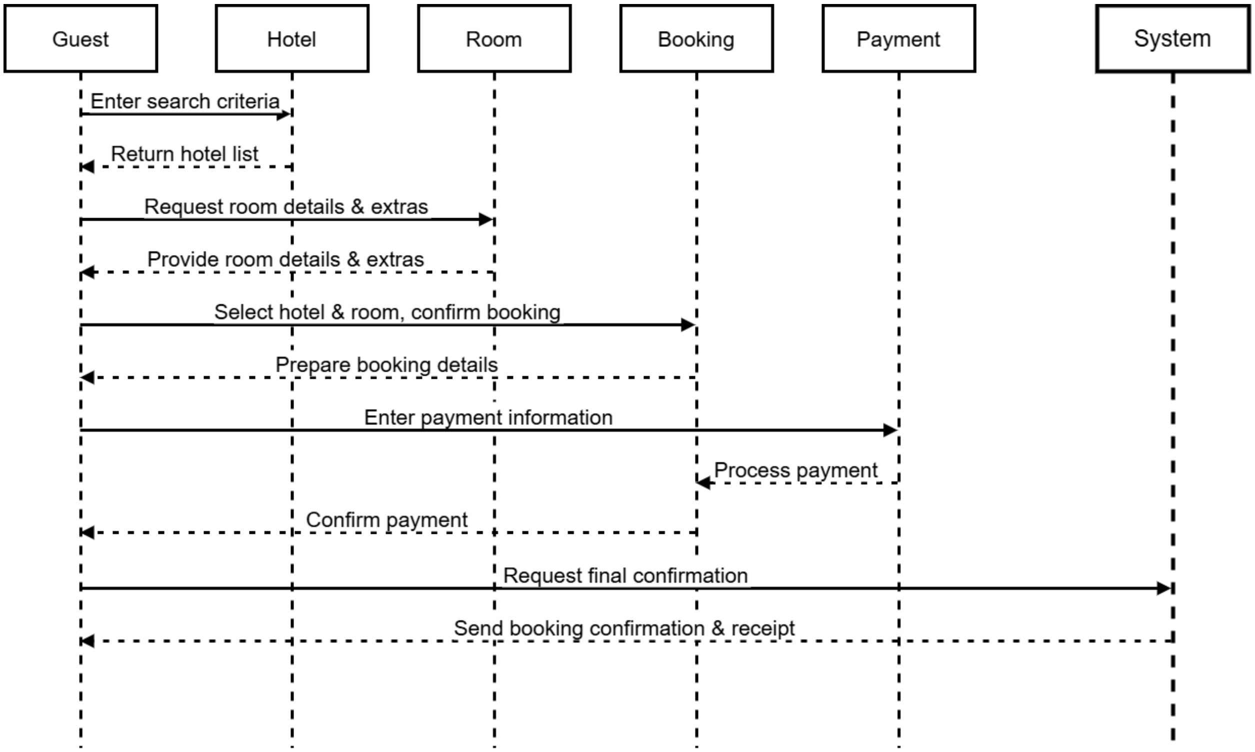
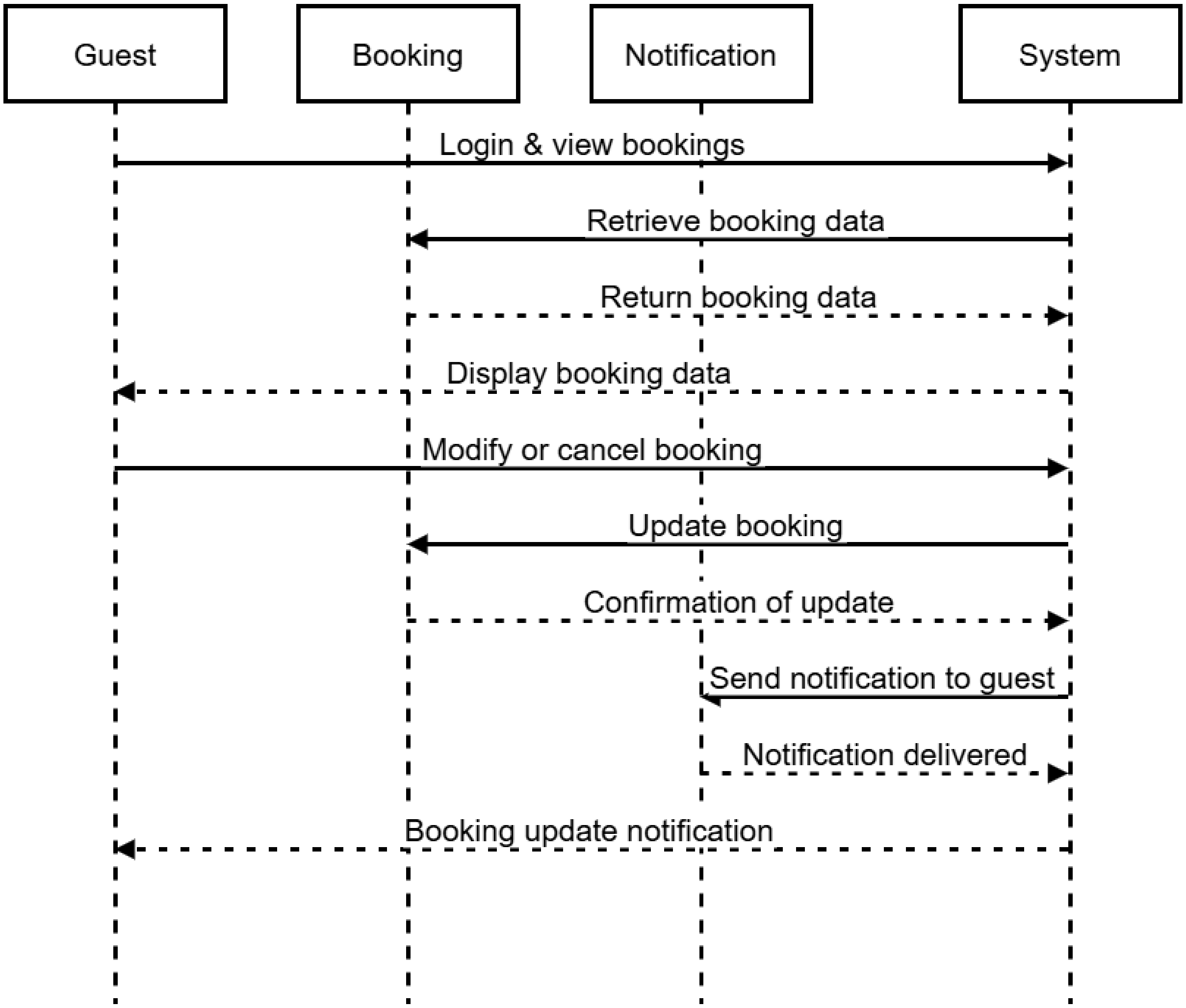
6. Sequence Diagrams for Main Activities

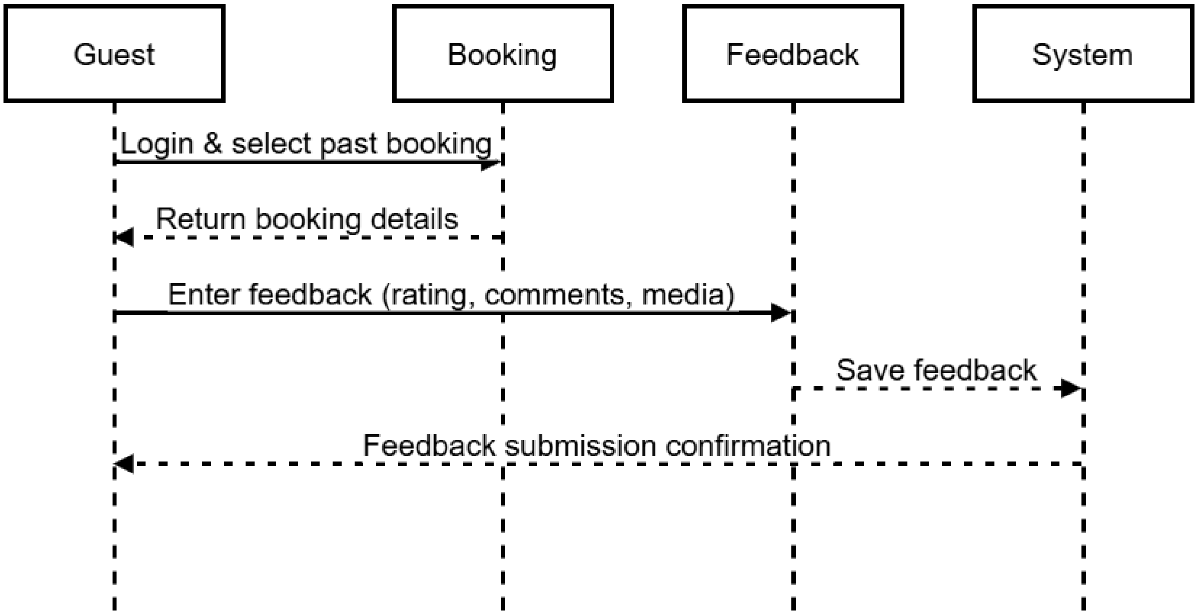
6.1 Sequence Diagram: Searching & Booking a Hotel Room


Guest
Hotel
Room
Booking
Payment
System
Enter search criteria
Return hotel list
Request room details & extras
Provide room details & extras
Select hotel & room, confirm booking
Prepare booking details
Enter payment information
Process payment
Confirm payment
Request final confirmation
Send booking confirmation & receipt

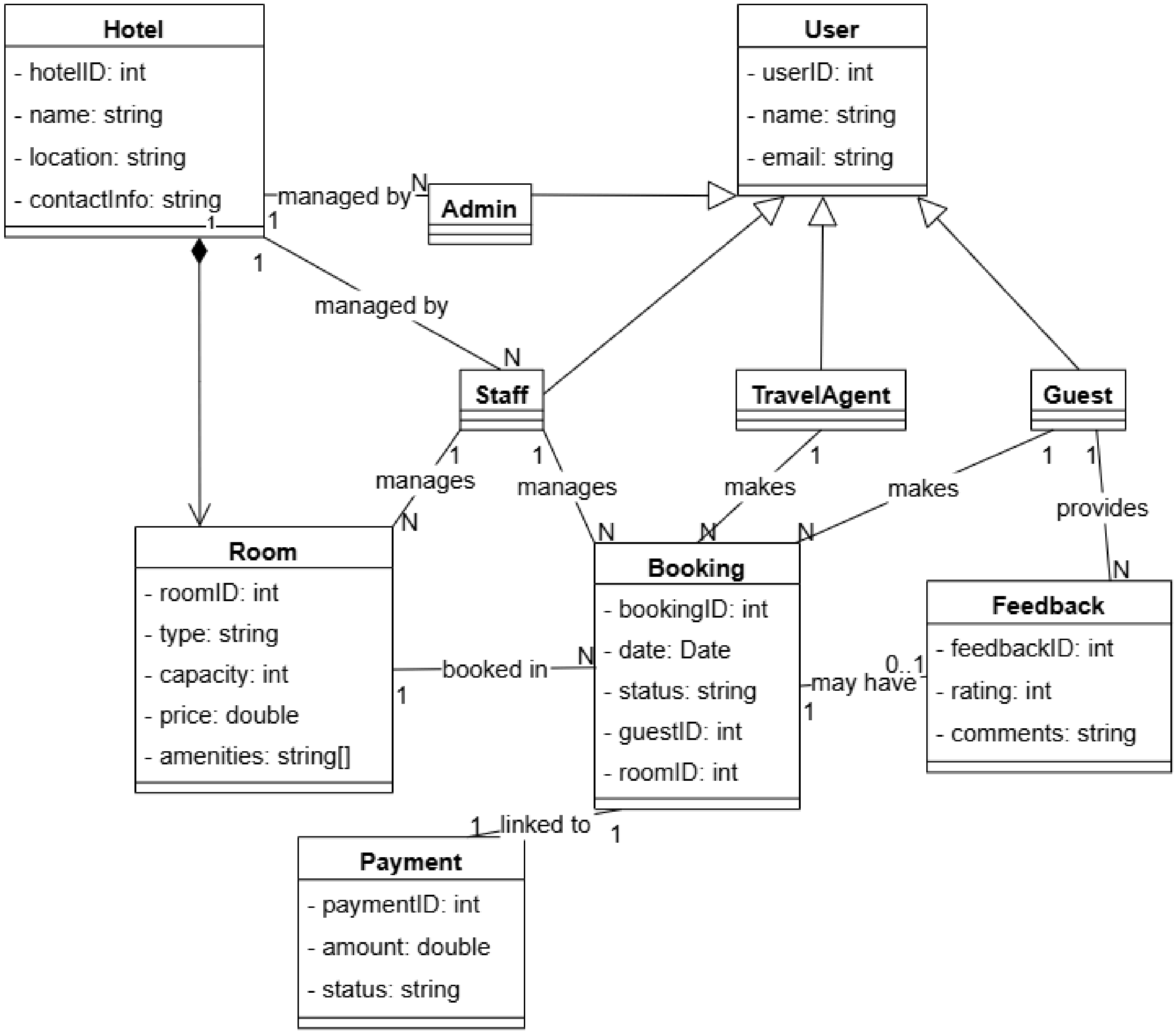
6.2 Sequence Diagram: Managing Bookings



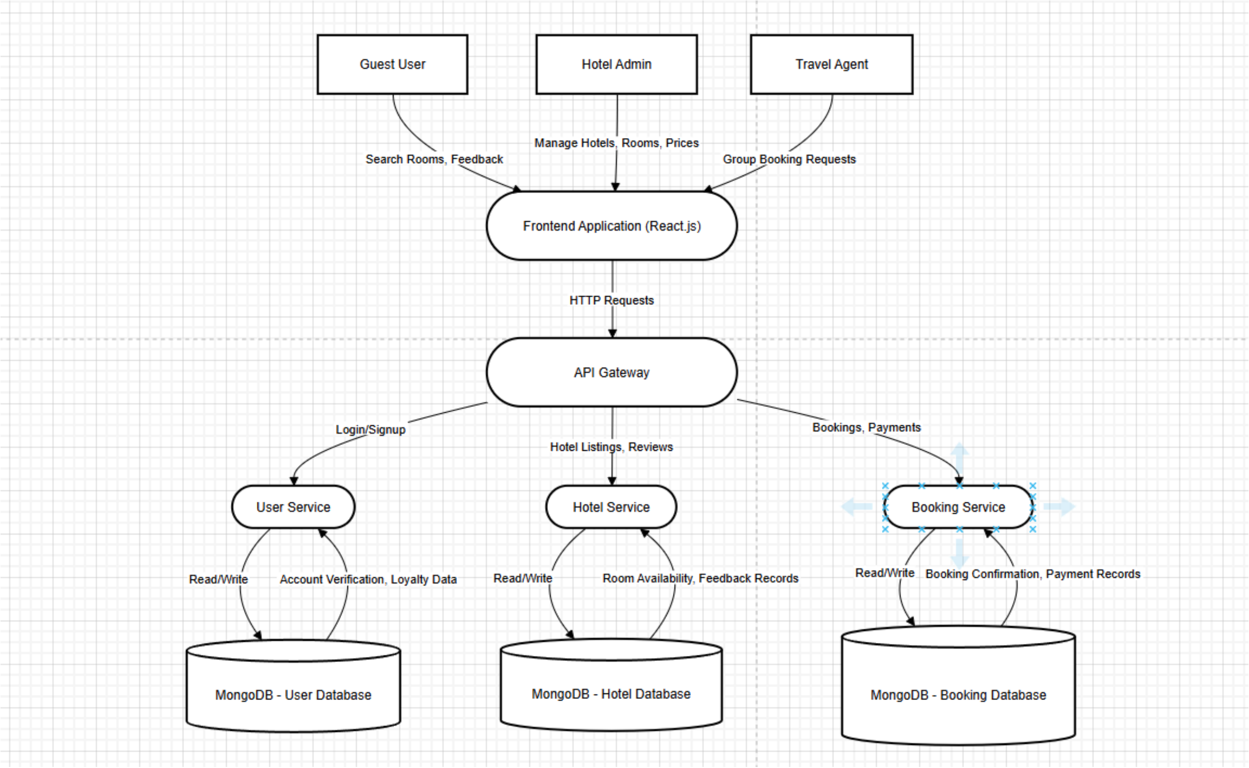
6.3 Sequence Diagram: Providing Feedback


Guest
Booking
Feedback
System
Login & select past booking
Return booking details
Enter feedback (rating, comments, media)
Save feedback
Feedback submission confirmation

7. Class Diagram



Seeing as the system is based on the MERN stack and is a functional program instead of an Object Oriented Program, a traditional Class Diagram would not be appropriate to describe the system. Instead a Data Flow diagram must be utilised:



8. Conclusion

This SRS document provides a comprehensive view of the Hotel Booking System. It details all functional and non-functional requirements, a high-level use case diagram with associated user stories (including pre- and post-conditions), and outlines the system's workflow through sequence diagrams. Finally, the class diagram highlights the core objects and their relationships—ensuring the system is robust, scalable, and maintainable.