

Full System Description for Flight Reservation Web Application

Overview:

The Flight Reservation Web Application is a comprehensive web-based platform designed for an airline company. It facilitates efficient flight booking, management, and administrative tasks. The system caters to different user types: passengers (both registered and unregistered), tourism agents, airline agents, and system administrators.

Functional Components:

1. Flight Booking Interface:

- Search Module: Allows users to search for flights by destination, date, and class (Ordinary, Comfort, Business-Class). Includes filters for layovers, times, and airlines.
- Seat Selection: Graphical seat map displaying available seats with the option to choose between different seat types.
- Payment Gateway: Secure processing of payments via credit card, with options for selecting ticket cancellation insurance.

2. User Account Management:

- Profile Management: Users can create and manage profiles, storing personal information, travel history, and payment details.
- Loyalty Program: Registered users receive benefits like monthly promotions, discounted lounge access, and annual companion tickets.

3. Administrative Panel:

- Flight Management: Admins can add, remove, or modify flight schedules, manage pricing, and view booking statistics.
- Crew and Aircraft Management: Assign crew to flights, manage aircraft details, and maintain crew rosters.
- User Management: View and manage user registrations, handle customer queries and complaints.

4. Notification System:

- Email Integration: Automated system for sending e-tickets, payment receipts, and promotional offers to users.

5. Reporting Tools:

- Generate reports on flight occupancy, revenue, user activity, and more, aiding in data-driven decision-making.

Technical Specifications

1. Frontend Development:

- Technologies: React
- Responsive Design: Ensures compatibility with various devices (desktops, tablets, smartphones).

2. Backend Development:

- Server-side: Spring
- RESTful API: To handle requests between the front-end and the back-end.

3. Database Management:

- SQL-based database (MySQL) for storing user data, flight details, transactions, etc.

4. Security Measures:

- Implementation of SSL/TLS for secure data transmission.
- Regular audits and updates to ensure data protection and system integrity.

User Interaction Flow

1. Passengers:

- Browse and book flights, select seats, make payments, and manage bookings.
- Receive e-tickets and payment receipts via email.

2. Airline Agents:

- Access passenger lists, assist with bookings, and provide customer support.

3. System Admins:

- Manage flight schedules, aircraft, and crew assignments.
- Oversee user registrations and data analytics.

Conclusion

This Flight Reservation Web Application is designed to streamline the booking and management processes for an airline, enhancing user experience and operational efficiency. It combines a user-friendly interface with robust back-end functionalities to meet the diverse needs of its users and administrators.

Scenario for Passenger

Use Case: Book and Manage Flight

Scenario:

- Sarah, a Passenger, decides to book a flight to Paris. She opens the Flight Reservation Web Application on her laptop and begins by searching for flights. She inputs her travel details into the Flight Search Tool, including her departure city, destination (Paris), travel dates, and preferences. The system displays a list of available Flights, showing Departure Times, Arrival Times, Layovers, and Ticket Prices.

- Sarah selects a suitable Flight that fits her schedule and budget. She proceeds to the Seat Selection interface, where she views the Aircraft Seat Map. Here, she chooses a Comfort Seat near the window. The system updates her choice and directs her to the optional Travel Insurance section. After reviewing the terms, Sarah opts for travel insurance, adding it to her booking.

- Next, she proceeds to the Payment Gateway. She securely enters her Credit Card Details and completes the transaction. The system confirms her payment and booking, then generates her E-Ticket and a detailed Payment Receipt. Both documents are sent to Sarah's Email Address.

- A week before her flight, Sarah decides to change her seat. She logs back into the system, accesses her Upcoming Flights, and selects the Paris trip. In the Manage Booking section, she views her current seat and switches to an aisle seat in the Business-Class section, paying the additional fee through the Payment Gateway. The system confirms her new seat assignment and sends an updated E-Ticket to her email.

Scenario for Tourism Agent

Use Case: Search and Book Flights for Clients

Scenario:

- John, a Tourism Agent, logs into the Flight Reservation System. He uses the Flight Search functionality to find flights for a client traveling from New York to London. John inputs the destination, date, and preferences into the Search Interface. The system displays a list of

available Flights with details like Departure Times, Arrival Times, Flight Duration, and Prices. He selects a suitable Flight and proceeds to Seat Selection, where he chooses a Business-Class Seat for his client. After confirming the selection, John is taken to the Payment Gateway where he enters the client's Payment Details and completes the transaction. The system generates an E-Ticket and Payment Receipt, which are automatically sent to both John and his client via Email.

Scenario for Airline Agent

Use Case: View and Manage Bookings

Scenario:

- Emily, an Airline Agent, accesses the Booking Management System to review a passenger's booking details. She retrieves the booking using the Passenger's Name and Flight Number. The system displays the Flight Details, Seat Number, Fare, and Ancillary Services booked by the passenger. Emily notices a request for a Special Meal and confirms its availability. She also checks the Payment Status and notes that it is fully paid. Before closing the booking, Emily updates the Contact Information as requested by the passenger.

Scenario for System Administrator

Use Case: Manage Flight Schedules

Scenario:

- Alex, a System Administrator, is tasked with updating the Flight Schedule for the upcoming week. He logs into the Admin Panel and navigates to the Flight Management section. Here, Alex reviews the existing Flight Schedules, including Departure Times, Arrival Times, and Flight Routes. He decides to add a new flight from San Francisco to Tokyo. Alex enters the Flight Details such as Flight Number, Departure and Arrival Times, Aircraft Type, and Crew Assignment. After ensuring all details are correct, he saves the new flight schedule, which is now visible to passengers and agents on the Public Interface of the system.