Airline Reservation System

1. Introduction

The Airline Reservation System is a web-based application designed to manage flight bookings efficiently. It allows users to search available flights, book tickets, and view or cancel their bookings through an easy-to-use interface. The system automates the management of flight details, customers, seat allocation, and booking status. This project aims to minimize manual work and enhance accuracy, speed, and accessibility in airline ticket management using an SQL-based backend connected to a simple web interface.

2. Abstract

The project focuses on building a database-driven Airline Reservation System using MySQL as the backend and HTML, CSS, and PHP for the frontend interface. The system maintains records of flights, customers, bookings, and seats in a normalized database schema. Users can perform operations such as searching for flights, booking seats, and checking booking summaries. The project also includes SQL triggers to automate booking updates and cancellations, ensuring data integrity. Overall, it demonstrates how a structured database and minimal web interface can efficiently handle core airline operations.

3. Tools Used

- **Frontend:** HTML, CSS (for design and layout)
- **Backend Language:** PHP (for connecting and interacting with the database)
- **Database:** MySQL (for data storage and SQL operations)
- **Development Environment:** XAMPP / MySQL Workbench (for testing and execution)

4. Steps Involved in Building the Project

1. **Database Design:**
   Created four main tables — *Flights*, *Customers*, *Bookings*, and *Seats* — and normalized the schema to remove redundancy.
2. **Defining Constraints:**
   Added primary keys, foreign keys, and data integrity constraints for relationships between tables.
3. **Inserting Sample Data:**
   Added demo flight, customer, and booking records to test queries and triggers.

4. **SQL Queries and Views:**
   Developed queries to search available flights, find free seats, and display booking summaries. Created a BookingSummary View to combine all information.

5. **Triggers Implementation:**
   Wrote triggers to automatically handle booking updates and cancellations, maintaining real-time accuracy in seat availability and summary reports.

6. **Web Interface Development:**
   Designed two main pages:
   - *index.php* → Flight search and booking
   - *bookings.php* → View and cancel bookings
     These connect directly with the database using PHP for CRUD operations.

7. **Testing:**
   Performed test cases for flight booking, cancellation, and seat updates to ensure smooth functionality.

5. Conclusion

The Airline Reservation System successfully demonstrates how database management and web technologies can work together to automate ticket booking operations. It simplifies the process for users while maintaining data accuracy for the airline. The system provides real-time booking updates, user-friendly interfaces, and automated triggers that make it reliable and efficient. In future versions, additional features like online payment integration and flight schedule management can be added to make it a fully functional airline management platform.