

Report on Airline Reservation System

Introduction

Air transport has become one of the most important means of travel in today's world. With increasing passenger demand and multiple flights being scheduled every day, managing reservations manually is a very time-consuming and error-prone process. The Airline Reservation System is developed to automate this process and make flight booking, cancellation, and management easy for both customers and airline staff.

This system provides passengers with the ability to check available flights, book tickets, and reserve specific seats. On the other side, airlines can maintain flight details, monitor booked and available seats, and update information efficiently. By using a centralized computerized system, both efficiency and accuracy are improved. The system also ensures better customer satisfaction by reducing waiting times and minimizing errors in booking.

Abstract

The Airline Reservation System is a database-based application that stores, manages, and processes flight booking information. It is mainly focused on making the flight booking process simple, accurate, and fast. Passengers can use the system to search for flights based on their source, destination, and travel date, after which they can book their seats. Once booked, the system automatically marks those seats as unavailable to avoid duplication.

The project is designed using MySQL, which plays a crucial role as the database management system. All flight-related data, customer details, booking history, and seat availability are stored in the MySQL database. The main advantage of using this system is that it reduces manual work, avoids human errors, and makes the booking process faster and more reliable. This project is scalable, meaning that more features like online payment, web access, and SMS/email alerts can be added in the future.

Tools Used

MySQL – The entire project is developed around the MySQL database. MySQL is used to store tables such as Flights, Customers, Bookings, and Seats. It is chosen because it is open-source, reliable, fast, and supports complex queries required for an airline booking system.

Steps Involved in Building the Project

1. Requirement Analysis:

The first step is to understand what the system needs to achieve. The key requirements are:

- Storing flight details like source, destination, timings, and total seats.
- Maintaining customer records such as name, phone number, and email.
- Allowing customers to book seats and receive confirmation.
- Keeping track of available and booked seats.
- Providing the ability to cancel bookings.

2. Database Design:

A proper relational database structure is designed. The main tables are:

- Flights (FlightID, FlightNumber, Source, Destination, DepartureTime, ArrivalTime, TotalSeats)
- Customers (CustomerID, Name, Email, Phone)
- Bookings (BookingID, CustomerID, FlightID, SeatNumber, BookingDate, Status)
- Seats (SeatID, FlightID, SeatNumber, IsBooked) .

Each table is connected through primary keys and foreign keys to maintain relationships.

3. ER Diagram Creation:

To visualize the database design, an Entity-Relationship (ER) Diagram is created.

- Rectangles represent entities (Flights, Customers, Bookings, Seats).
- Ellipses represent attributes (like FlightNumber, Name, SeatNumber).
- Rhombuses represent relationships (e.g., “books”, “has”).
- Primary keys are underlined to show uniqueness.

4. Database Implementation in MySQL:

Once the design is ready, the tables are created in MySQL using CREATE TABLE queries. Constraints like PRIMARY KEY, FOREIGN KEY, and DEFAULT values ensure that the data is accurate and consistent.

5. Testing and Validation:

Sample data is inserted into the database for flights, customers, and seats. Queries are then run to check:

- Flight availability
- Seat booking and marking as reserved
- Retrieving booking details for a customer
- Canceling bookings and freeing seats

6. Deployment:

The final step involves using the system for real-time bookings. The database can be integrated with a web or desktop application, allowing customers to interact with the system easily.

Conclusion:

The Airline Reservation System is a reliable solution for handling flight bookings and managing passenger records. By using MySQL as the database, the system ensures secure data storage, fast access, and accurate processing. The system provides several benefits:

- For customers: Quick flight search, simple booking process, and real-time seat availability.
- For airlines: Centralized record-keeping, reduced manual work, and efficient management of bookings.

In conclusion, the Airline Reservation System makes airline management easier, reduces errors, and saves time. With future improvements, such as integrating online payments and cloud deployment, it can evolve into a large-scale commercial system capable of handling bookings for multiple airlines worldwide.