

# Airline Reservation System – Project Report

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## 1. Introduction

The Airline Reservation System is a relational database project designed to streamline and manage flight bookings, customer records, and seat allocation processes efficiently. Airlines handle large volumes of transactions daily, making automation critical for operational efficiency, data accuracy, and customer service.

This system simulates the booking process of real-world airlines using structured SQL tables, triggers, and queries to automate routine tasks like seat assignment and booking updates.

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## 2. Abstract

In this project, a database-driven solution is developed to manage:

- Flight schedules
- Customer information
- Booking records
- Seat availability

Automation is achieved using SQL triggers for tasks like updating seat status during bookings and cancellations. Analytical queries are used to generate real-time reports for management insights.

The system ensures data integrity using primary and foreign key constraints and facilitates flight search, booking summaries, and real-time seat availability tracking.

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## 3. Tools Used

- **Database:** MySQL / MySQL Workbench
  - **Language:** SQL
  - **Database Concepts:**
    - Tables
    - Triggers
    - Constraints
    - Views
    - Queries
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## 4. Steps Involved in Building the Project

### Database Schema Design

#### Tables Created:

- Flights
- Customers
- Bookings
- Seats

### Database Normalization

Foreign keys applied to maintain data integrity.

### Sample Data Insertion

20+ sample rows inserted into Flights, Customers, Bookings, and Seats tables.

### Core SQL Queries

- Flight search based on origin/destination.
- Real-time available seats view.
- Booking summary reports.

### Triggers Development

- After booking insertion: Seat auto-marked as booked.
- After booking cancellation or deletion: Seat auto-marked as available.
- Change log triggers for audit tracking.

### Report Generation

- Booking summary reports using GROUP BY.
- Views for available flights and seats.

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## 5. Conclusion

The Airline Reservation System successfully demonstrates the use of relational databases to manage flight reservations efficiently. It leverages SQL triggers for backend automation, ensuring seat availability is always accurately tracked without manual intervention. This project serves as a foundational model for real-world airline databases, offering scalability and scope for future enhancements like dynamic pricing, waitlists, and multi-user role management.