🛫 Airline Reservation System

Submitted by: Raj Kumar

Company Name: Elevate Labs

Date: July 2025

🏢 **Elevate Labs**

1. Introduction

The Airline Reservation System is a database application built using MySQL to efficiently manage airline operations including flight details, passenger information, seat allocations, and booking records. The objective of the system is to create a reliable backend that facilitates smooth booking and cancellation of flight seats while maintaining data consistency.

2. Abstract

This project implements a relational database management system (RDBMS) for an airline company. The system includes tables for Passengers, Flights, Seats, and Bookings. It supports functionalities such as inserting flight schedules, managing seat availability, and handling bookings through SQL queries and constraints. Triggers and foreign key constraints are applied to ensure data integrity. A booking summary query allows administrators to view current reservations effectively.

3. Tools Used

- MySQL Workbench – SQL query writing and database modeling

- MySQL Server – Database engine for execution

- ER Diagram – Logical structure design

- PDF Writer – For generating this project report

4. Steps Involved in Building the Project

1. Database Setup: Created a new database: **Airline Reservation System**.

2. Schema Design: Created normalized tables: Passengers, Flights, Seats, and Bookings. Defined appropriate data types, **primary keys, and unique constraints.**

3. Data Insertion: Inserted sample records into all tables, ensuring realistic values (10 passengers, 10 flights, 10 seats, 10 bookings).

4. Data Integrity: Applied **foreign key constraints** to link Passengers → Bookings, Flights → Seats & Bookings, Seats → Bookings.

5. Seat Allocation: Each booking includes a unique seat, matched with a SeatID from the Seats table. Booked seats marked as TRUE.

6. Report Generation: Used **SQL JOIN queries** to generate a detailed booking summary, combining data from all tables.

5. Conclusion

This project demonstrates how SQL can be used to build a robust backend for a real-world airline booking system. By using structured tables, relational integrity, and sample data, the project highlights efficient data handling and reporting. This system can be expanded further with login modules, payment integration, or web interfaces using front-end technologies.

"This concludes the Airline Reservation System SQL project. The system is functional, normalized, and query-ready for real-time use."

"Thank You."