**Project Report**

**Airline Reservation System (MySQL-Based)**

**1. Introduction**

The Airline Reservation System is a database management project developed using **MySQL Workbench**. It aims to simplify the process of flight bookings, cancellations, and seat management. The system is built using SQL features such as **tables**, **views**, **stored procedures**, and **triggers**, offering real-time automation and accurate data handling.

**2. Objective**

The main objective of the project is to:

* Develop a structured and efficient airline reservation database system.
* Automate the seat booking and cancellation process using **stored procedures and triggers**.
* Enable data visualization using **views** for available flights and booking reports.

**3. Tools & Technologies Used**

| **Tool** | **Description** |
| --- | --- |
| MySQL Workbench | For designing, writing, and testing SQL queries |
| SQL | For database creation and manipulation |
| ER Model | To visualize and plan database structure (optional) |

**4. Functional Modules**

**a. Flights Table**

Stores all available flight details such as Flight ID, source, destination, date, time, and total seats.

**b. Customers Table**

Stores customer details such as customer ID, name, email, and contact number.

**c. Bookings Table**

Stores flight bookings made by customers. Each record connects a customer to a flight and tracks booking status.

**d. Seats / Availability**

Seats availability is automatically updated through **triggers** during booking or cancellation.

**5. Features Implemented**

| **Feature** | **Description** |
| --- | --- |
| Flight Search | Search flights by source, destination, and date |
| Booking System | Book flights using a stored procedure |
| Cancel Booking | Cancel booking with seat count rollback |
| Views | Predefined views for displaying available flights |
| Triggers | Automatic updates on seat availability |
| Stored Procedures | Encapsulate business logic like booking and cancellation |
| Reports | Booking history and flight summary reports |

**6. Sample Queries & Output**

-- View all available flights

SELECT \* FROM AvailableFlightsView;

-- Book a seat (Flight ID = 1, Customer ID = 101)

CALL BookSeat(1, 101);

-- Cancel a booking (Booking ID = 1)

CALL CancelBooking(1);

-- View booking summary

SELECT \* FROM BookingSummaryView;

**7. Outcomes**

* Hands-on understanding of database normalization and design.
* Practical knowledge of **joins, constraints, triggers, and procedures**.
* Real-time simulation of a functional airline booking system.**8. Learnings**
* Structured data management using MySQL.
* Implementation of real-life business logic in SQL.
* Automation through triggers and procedures.
* Creation of dynamic views for easier data access.

**9. Future Scope**

* Adding user interface using PHP/Java/Python.
* Payment gateway integration.
* Real-time flight status updates via API.

**10. Conclusion**

This project demonstrates the design and implementation of a simple, yet functional, **Airline Reservation System** using SQL. It shows how real-life systems can be built and managed effectively using database features such as procedures, triggers, and views.