Flight Reservation System

Introduction:

The Flight Reservation System is a comprehensive solution designed to facilitate flight bookings, management of aircraft and flights, and user management. The system allows users to sign up, update their details, search for available flights, and perform operations such as booking, canceling, and changing flight class. Additionally, administrators have the ability to add and update aircraft and flight details. This report presents an overview of the solution, including the conceptual and physical ERD, the SQL Server database, and the implementation details in C#.

Conceptual ERD:

The conceptual ERD represents the high-level entities and their relationships in the Flight Reservation System. It includes entities such as Users, Aircraft, Flights, and Bookings. The relationships between these entities capture the core functionalities of the system, such as user bookings, aircraft details, and flight information.

Physical ERD:

The physical ERD translates the conceptual model into a database schema. It defines the tables, columns, data types, constraints, and relationships required to implement the system. The physical ERD ensures data integrity and efficient data retrieval.

SQL Server Database:

The SQL Server database was generated based on the physical ERD. It includes tables such as Users, Aircraft, Flights, Airport,Ticket,Admin, and additional supporting tables for data normalization and referential integrity. The database schema provides a robust foundation for storing and managing the system data.

Implementation in C#:

The Flight Reservation System was implemented using C# programming language. The system

includes various functionalities that allow users to interact with the database and perform operations. The implemented functionalities are as follows:

1-Signing up a new user: Users can register as admin or customer by providing their details.

2-Updating a user's details: Users can modify their personal information such as name, contact details, etc.

3-Adding an aircraft: Administrators have the authority to add new aircraft by providing relevant details such as aircraft type, capacity, and registration number.

4-Updating an aircraft details: Administrators can update aircraft information such as capacity, maintenance status, etc.

5-Adding a flight: Administrators can add new flights by specifying details like source, destination, departure time, and available seats.

6-Updating a flight details: Administrators can modify flight information such as departure time, arrival time, etc.

7-Showing a list of available flights: Users can search for flights that meet specific criteria such as date, source, destination, and required number of seats.

8-Performing operations on flights: Users can book flights, cancel bookings, and change flight class (economy, business, etc.) based on their preferences and availability.

9-Selecting data from tables: Users can retrieve information from any table of the database,

such as user details, flight information, or booking records.

10-Selecting data using joins: Users can retrieve data that involves multiple tables by performing joins, such as retrieving user details along with their booked flights.