Airline Reservation and Management System (Version - 2)

Problem Statement:

SkyHigh Airlines, in response to increasing demand, is implementing a comprehensive airline reservation and management system to handle passenger bookings, optimize seating, and track flight operations. The system should manage flights, handle passenger details, ensure seat allocations based on preferences, and allow passengers to earn and redeem rewards through a distinct loyalty program. Additionally, the system will provide updates on flight status to enhance user experience and operational efficiency.

Each flight has unique details, including the destinations it serves, the times it departs and arrives, the classes of travel available (e.g., Economy, Business, First). Every booking is uniquely identified and connects passengers to their reserved seats while linking the reservation to the corresponding flight. Passengers are central to this system, and the system should maintain their personal information and preferences for seating (e.g., window or aisle).

Each flight operates with a detailed record of available and occupied seats. The system must ensure that every seat on a flight is accounted for, whether it is available for booking, or booked. The seat assignment status should dynamically update as passengers confirm or cancel their bookings.

SkyHigh Airlines also runs a dedicated loyalty program to reward frequent flyers. This program uniquely tracks the miles accumulated by passengers and allows them to redeem their points for exclusive services, such as free upgrades or discounts. Notably, this loyalty program operates independently of the core passenger database, ensuring focused and streamlined rewards management.

Efficient seat allocation is essential, as it ensures that passengers' seating preferences are respected, and any cancellations or changes in bookings are reflected accurately to accommodate new travelers.

Note: Define data types as per the given case study (enum,date,etc).

Deliverables:

Q1) Draw an E-R Diagram for the Airline Reservation and Management System, illustrating components given in the above case study and infer the relationships and constraints within the system.

Q2) Convert the E-R Diagram into a relational schema, detailing constraints to provide a clear view of the database design.