AIRLINE TICKET RESERVATION MANAGEMENT SYSTEM

OBJECTIVES:

To design a database for a rental platform which should support the following features:

- Users must be able to login/register and user details such as username, email, password, address etc., must be stored.
- Users must be able to create a new listing and view existing listings
- Users must be able to propose and accept deals for a listing
- Order details must be stored, and users and employees must be able to access the order details.
- Maintain details of employees such as email, first name, last name, designation, pay etc.

PROBLEM STATEMENT:

1. It is time consuming to manually remove the posts associated with a user's account when a user has deleted their account.

2. Unable to quickly retrieve all the listings posted by a particular user, since the users and listings are stored in separate files.

3. Multiple users are signing-up with the same username and it is difficult to prevent this by manually searching the existing usernames. This causes data inconsistency.

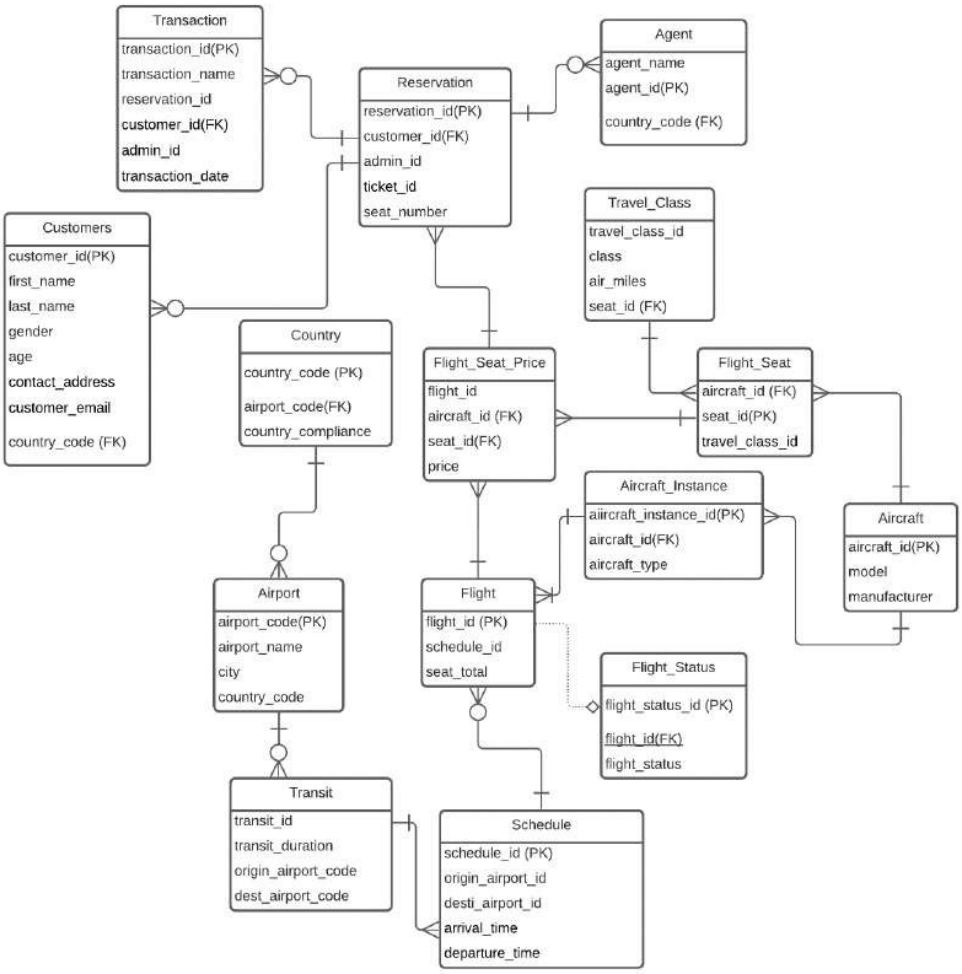
4. It is in-efficient and time-consuming to manually search and obtain the User and listing owner details of a deal.

Proposed solution:

- For Customers to buy a flight ticket the attribute which we are setting are as follows: customer id, first name, last name, gender, age, contact address, customer email, country code.

- Once customer is ready for transactions, transactions will be having attributes such as transaction id, transaction name, reservation id, customer id, admin id, transaction date, their booking is confirmed so we have created entity Reservation to show customer's flight details. Attributes of reservation entity is reservation id, customer id, admin id, ticket id, seat number.
- We are going to set up a system in which tickets can be booked in different ways such as agents, third party websites or airlines official website, so the attributes of Agent entity are agent name, agent id, country code.
- We are also going to set up a database stored procedure as a trigger that will run when specific actions occur in the database. This procedure will act on events whenever there is a successful transaction on tickets. The stored procedure will update the "flight" entity with the new total seat count. This process will help to ensure that instances like overbooking never occur in the database.
- While reserving seat customer can opt to select seat or not, if they want to select seat and reserve it, price of seats will be displayed as per current demand as seat prices are dynamic in nature, we have created Flight seat price entity which includes attributes such as flight id, aircraft id, seat id, price. Available seats info will be extracted from entity Flight Seat which includes attributes such as aircraft id, seat id, travel class id. Seat count or availability will be further bifurcated according to its class i.e., Business class, economic class hence we have created separate entity Travel Class for this condition which includes attributes such as travel class id, class, air miles (Loyalty points), seat id.
- In addition to this we are also trying to provide the flight status of the airplane journey by creating a flight status entity which is dependent on flight which will make it as a weak entity.

DATA MODEL E-R DIAGRAM:


Transaction
transaction_id(PK)
transaction_name
reservation_id
customer_id(FK)
admin_id
transaction_date
Reservation
reservation_id(PK)
customer_id(FK)
admin_id
ticket_id
seat_number
Agent
agent_name
agent_id(PK)
country_code (FK)
Customers
customer_id(PK)
first_name
last_name
gender
age
contact_address
customer_email
country_code (FK)
Travel_Class
travel_class_id
class
air_miles
seat_id (FK)
Country
country_code (PK)
airport_code(FK)
country_compliance
Flight_Seat_Price
flight_id
aircraft_id (FK)
seat_id(FK)
price
Flight_Seat
aircraft_id (FK)
seat_id(PK)
travel_class_id
Aircraft_Instance
aiircraft_instance_id(PK)
aircraft_id(FK)
aircraft_type
Aircraft
aircraft_id(PK)
model
manufacturer
Airport
airport_code(PK)
airport_name
city
country_code
Flight
flight_id (PK)
schedule_id
seat_total
Flight_Status
flight_status_id (PK)
flight_id(FK)
flight_status
Transit
transit_id
transit_duration
origin_airport_code
dest_airport_code
Schedule
schedule_id (PK)
origin_airport_id
desti_airport_id
arrival_time
departure_time

CUSTOMER

ATTRIBUTES	DATA TYPE AND SIZE	COMMENTS
CUSTMER_ID	INTEGER	PRIMARY KEY, AUTO GENERATED
FIRST_NAME	VARCHAR (45)	NOT NULL
LAST_NAME	VARCHAR (45)	NOT NULL
GENDER	VARCHAR (45)	NOT NULL
AGE		
ADDRESS	VARCHAR (60)	NOT NULL
EMAIL	VARCHAR (60)	UNIQUE KEY, NOT NULL
COUNTRY CODE	INTEGER	A Foreign Key which REFERENCES CUSTOMER_ID from the CUSTOMER ATTRIBUTES.

RESERVATION

ATTRIBUTES	DATA TYPE AND SIZE	COMMENTS
RESERVATION ID	VARCHAR(60)	PRIMARY KEY, AUTO GENERATED
ADMIN ID	VARCHAR(60)	NOT NULL
TICKED IT	INTEGER	NOT NULL
SEAT NUMBER	VARCHAR (45)	NOT NULL
CUSTOMER ID	INTEGER	A Foreign Key which REFERENCES CUSTOMER_ID from the CUSTOMER ATTRIBUTES.

TRANSACTION

ATTRIBUTES	DATA TYPE AND SIZE	COMMENTS
TRANSACTION ID	INTEGER	PRIMARY KEY, AUTO GENERATED
TRANSACTION NAME	VARCHAR(60)	NOT NULL
RESERVATION ID	INTEGER	NOT NULL
ADMIN ID	VARCHAR (45)	NOT NULL
CUSTOMER ID	INTEGER	A Foreign Key which REFERENCES CUSTOMER_ID from the

		CUSTOMER ATTRIBUTES.
TRANSACTION DATE	DATE	NOT NULL

RESERVATION

ATTRIBUTES	DATA TYPE AND SIZE	COMMENTS
RESERVATION ID	INTEGER	PRIMARY KEY, AUTO GENERATED
TICKET ID	INTEGER	NOT NULL
SEAT NO	INTEGER	NOT NULL
ADMIN ID	VARCHAR (45)	NOT NULL
CUSTOMER ID	INTEGER	A Foreign Key which REFERENCES CUSTOMER_ID from the CUSTOMER ATTRIBUTES.

AGENT

ATTRIBUTES	DATA TYPE AND SIZE	COMMENTS
AGENT NAME	VARCHAR (45)	NOT NULL
AGENT ID	INTEGER	PRIMARY KEY, AUTO GENERATED
COUNTRY CODE	INTEGER	A Foreign Key which REFERENCES CUSTOMER_ID from the CUSTOMER ATTRIBUTES.

FLIGHT SEAT PRICE

ATTRIBUTES	DATA TYPE AND SIZE	COMMENTS
FLIGHT ID	VARCHAR (45)	NOT NULL
AIRCRAFT ID	INTEGER	A Foreign Key which REFERENCES FLIGHT SEAT

SEAT_ID	INTEGER	A Foreign Key which REFERENCES FLIGHT SEAT
PRICE	INTEGER	NOT NULL

FLIGHT SEAT

ATTRIBUTES	DATA TYPE AND SIZE	COMMENTS
AIRCRAFT ID	INTEGER	A Foreign Key which REFERENCES AIRCRAFT
SEAT ID	INTEGER	PRIMARY KEY, AUTO GENERATED
TRAVEL CLASS ID	VARCHAR (15)	NOT NULL

TRAVEL CLASS

ATTRIBUTES	DATA TYPE AND SIZE	COMMENTS
CLASS	VARCHAR (15)	NOT NULL
TRAVEL CLASS ID	VARCHAR (15)	NOT NULL
SEAT ID	INTEGER	A Foreign Key which REFERENCES FLIGHT SEAT
AIRMILES	INTEGER	NOT NULL

FLIGHT

ATTRIBUTES	DATA TYPE AND SIZE	COMMENTS
FLIGHT ID	INTEGER	PRIMARY KEY, AUTO GENERATED
SCHEDULE ID	VARCHAR (15)/DATE	NOT NULL
SEAT TOTAL	INTEGER	NOT NULL

AIRCRAFT INSTANCE

ATTRIBUTES	DATA TYPE AND SIZE	COMMENTS
AIRCRAFT INSTANCE ID	INTEGER	PRIMARY KEY, AUTO GENERATED
AIRCRAFT ID	INTEGER	A Foreign Key which REFERENCES FLIGHT

AIRCRAFT TYPE	VARCHAR(15)	NOT NULL

AIRCRAFT

ATTRIBUTES	DATA TYPE AND SIZE	COMMENTS
AIRCRAFT ID	INTEGER	PRIMARY KEY, AUTO GENERATED
MODEL	VARCHAR(15)	NOT NULL
MANUFACTURER	VARCHAR(15)	NOT NULL

FLIGHT STATUS

ATTRIBUTES	DATA TYPE AND SIZE	COMMENTS
FLIGHT STATUS ID	INTEGER	PRIMARY KEY, AUTO GENERATED
FLIGHT ID	INTEGER	A Foreign Key which REFERENCES FLIGHT
STATUS	VARCHAR(15)	NOT NULL

SCHEDULE

ATTRIBUTES	DATA TYPE AND SIZE	COMMENTS
SCHEDULE ID	INTEGER	PRIMARY KEY, AUTO GENERATED
ORIGIN AIRPORT ID	INTEGER	NOT NULL
DESTINATION AIRPORT ID	INTEGER	NOT NULL
ARRIVAL TIME	TIME	NOT NULL
DEPARTURE TIME	TIME	NOT NULL

TRANSIT

ATTRIBUTES	DATA TYPE AND SIZE	COMMENTS
TRANSIT ID	INTEGER	NOT NULL
TRANSIT DURATION	INTEGER	NOT NULL
ORIGIN AIRPORT CODE	VARCHAR(15)	NOT NULL
DESTINATION AIRPORT CODE	VARCHAR(15)	NOT NULL

AIRPORT

ATTRIBUTES	DATA TYPE AND SIZE	COMMENTS
AIRPORT CODE	INTEGER	PRIMARY KEY, AUTO GENERATED
AIRPORT NAME	VARCHAR(45)	NOT NULL
CITY	VARCHAR(45)	NOT NULL
COUNTRY CODE	INTEGER	NOT NULL

COUNTRY

ATTRIBUTES	DATA TYPE AND SIZE	COMMENTS
COUNTRY CODE	INTEGER	PRIMARY KEY, AUTO GENERATED
AIRPORT CODE	INTEGER	A Foreign Key which REFERENCES AIRPORT
COUNTRY COMPLIANCE	VARCHAR(45)	NOT NULL