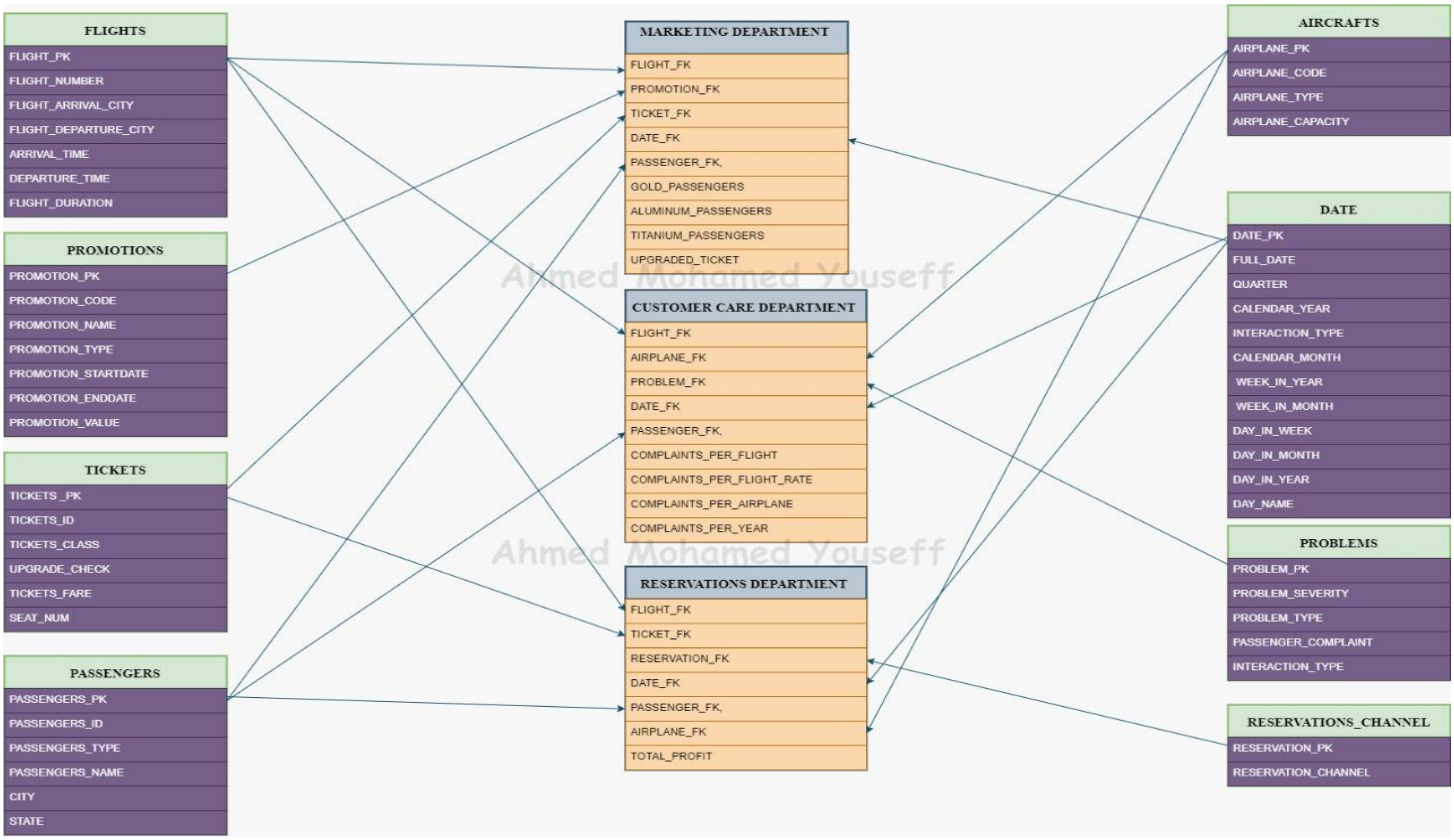
Name : Ahmed Mohamed Youseff

Logical model description



Use Galaxy Schema because the case study has 3 business processes

Fact table:

- Marketing
- Reservation
- Customer Care

Dimensions table:

- Flights
- Passengers
- Problems
- Promotions
- Tickets
- Date
- Aircrafts
- Reservation Channel

Marketing Fact Table: connected to five Dimension Tables

- **Promotions**: cover promotions offered by the airline company and their values
- **Passengers** : cover personal information of passenger and traveling miles and their type (Aluminum, Gold, Platinum, or Titanium)
- **Date** : represents the date at which the ticket has been bought and other important dates
- **Tickets** : cover the reserved ticket and the seat number. Upgrade column is by default 0 mean ticket class has been not upgraded and 1 if ticket class has been upgraded
- **Flights** : cover the flight destination and departure city. It also shows the flight duration

Customer Care Fact Table: connected to five Dimension Tables

- **Passengers** : cover personal information of passenger and traveling miles and their type (Aluminum, Gold, Platinum, or Titanium)
- **Date** : represents the date at which the ticket has been bought and other important dates
- **Flights** : cover the flight destination and departure city. It also shows the flight duration
- **Aircrafts** : This allows the finance team to keep track of the company's expenses
- **Problems** : represents passenger complaints and the level of the problem

Reservation Fact Table: connected to six Dimension Tables

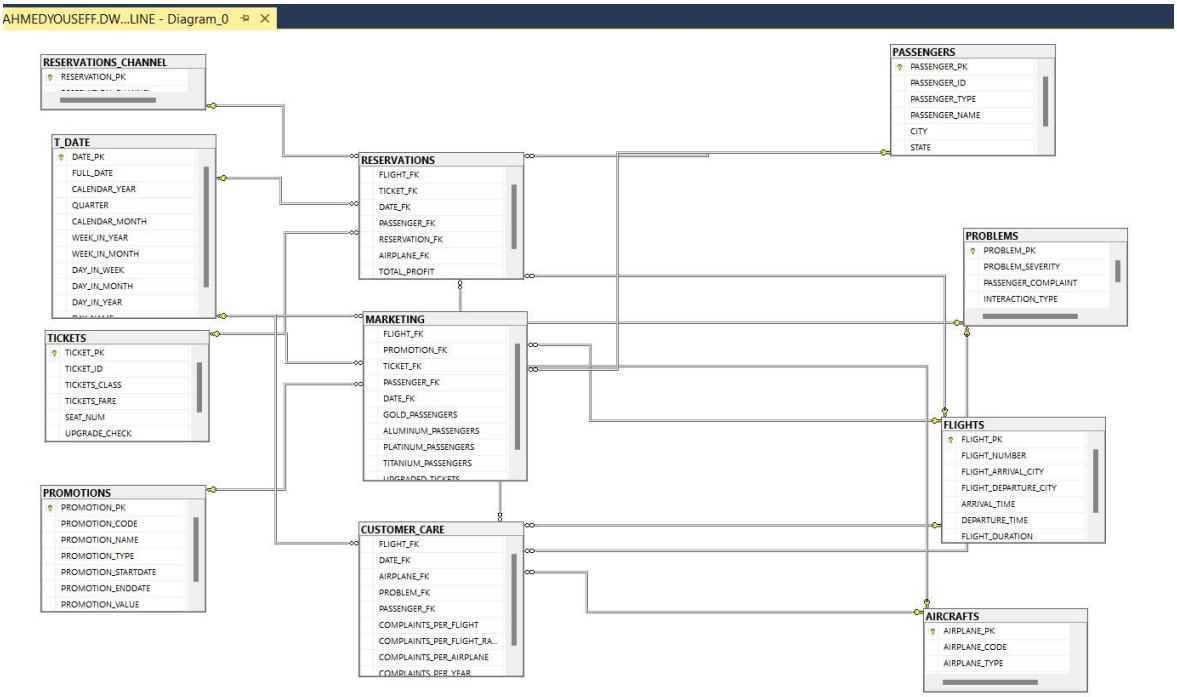
- **Passengers** : cover personal information of passenger and traveling miles and their type (Aluminum, Gold, Platinum, or Titanium)
- **Date** : represents the date at which the ticket has been bought and other important dates
- **Tickets** : cover the reserved ticket and the seat number. Upgrade column is by default 0 mean ticket class has been not upgraded and 1 if ticket class has been upgraded
- **Flights** : cover the flight destination and departure city. It also shows the flight duration
- **Reservation Channel** : represents the channel used to book the ticket
- **Aircrafts** : This allows the finance team to keep track of the company's expenses

physical data model

Use SQL Server To Create Table And Schema

```
--Ahmed Mohamed Youseff
USE DWHAIRLINE
----Create Dimension Tables
CREATE TABLE TICKETS (
                TICKET_PK INT PRIMARY KEY,
                TICKET_ID VARCHAR(100),
                TICKETS_CLASS VARCHAR(100),
                TICKETS_FARE NUMERIC,
                        SEAT_NUM NUMERIC(4),
                        UPGRADE_CHECK NUMERIC(1) );

CREATE TABLE PROMOTIONS (
                PROMOTION_PK INT PRIMARY KEY,
                PROMOTION_CODE VARCHAR(100),
                PROMOTION_NAME VARCHAR(100),
                PROMOTION_TYPE VARCHAR(100),
                PROMOTION_STARTDATE DATE,
                PROMOTION_ENDDATE DATE,
                PROMOTION_VALUE NUMERIC(8,2) );
CREATE TABLE T_DATE (
                DATE_PK INT PRIMARY KEY,
                FULL_DATE DATE,
                CALENDAR_YEAR NUMERIC(4),
                QUARTER NUMERIC(1),
                CALENDAR_MONTH NUMERIC(2),
                WEEK_IN_YEAR NUMERIC(3),
                WEEK_IN_MONTH NUMERIC(2),
                DAY_IN_WEEK NUMERIC(1),
                DAY_IN_MONTH NUMERIC(2),
                DAY_IN_YEAR NUMERIC(4),
                        DAY_NAME VARCHAR(100));

CREATE TABLE AIRCRAFTS (
                AIRPLANE_PK INT PRIMARY KEY,
                AIRPLANE_CODE VARCHAR(100),
                AIRPLANE_TYPE VARCHAR(100),
                AIRPLANE_CAPACITY NUMERIC(6) );

CREATE TABLE FLIGHTS(
                FLIGHT_PK INT PRIMARY KEY,
                FLIGHT_NUMBER NUMERIC,
                FLIGHT_ARRIVAL_CITY VARCHAR(100),
                FLIGHT_DEPARTURE_CITY VARCHAR(100),
                ARRIVAL_TIME DATE,
                DEPARTURE_TIME DATE,
                FLIGHT_DURATION NUMERIC);

CREATE TABLE PASSENGERS(
                PASSENGER_PK INT PRIMARY KEY,
                PASSENGER_ID NUMERIC,
                PASSENGER_TYPE VARCHAR(100),
                PASSENGER_NAME VARCHAR(100),
                CITY VARCHAR(100),
                STATE VARCHAR(100));

CREATE TABLE RESERVATIONS_CHANNEL(
                RESERVATION_PK INT PRIMARY KEY,
                RESERVATION_CHANNEL VARCHAR(100));
```

```
CREATE TABLE PROBLEMS(
                PROBLEM_PK INT PRIMARY KEY,
              PROBLEM_SEVERITY VARCHAR(100),
                PASSENGER_COMPLAINT VARCHAR(100),
              INTERACTION_TYPE VARCHAR(100));
-- Create Fact Tables
CREATE TABLE MARKETING(
                FLIGHT_FK  INT,
                PROMOTION_FK INT,
                TICKET_FK INT,
                PASSENGER_FK INT,
                DATE_FK INT,
                GOLD_PASSENGERS NUMERIC,
                ALUMINUM_PASSENGERS NUMERIC,
                PLATINUM_PASSENGERS NUMERIC,
                TITANIUM_PASSENGERS NUMERIC,
                UPGRADED_TICKETS NUMERIC);

CREATE TABLE CUSTOMER_CARE(
                FLIGHT_FK INT,
                DATE_FK INT,
                AIRPLANE_FK INT,
                PROBLEM_FK INT,
                        PASSENGER_FK INT,
                COMPLAINTS_PER_FLIGHT NUMERIC,
                        COMPLAINTS_PER_FLIGHT_RATE NUMERIC,
                        COMPLAINTS_PER_AIRPLANE NUMERIC,
                COMPLAINTS_PER_YEAR NUMERIC);

CREATE TABLE RESERVATIONS(
                 FLIGHT_FK INT,
                 TICKET_FK INT,
                 DATE_FK INT,
                 PASSENGER_FK INT,
                 RESERVATION_FK INT,
                 AIRPLANE_FK INT,
                 TOTAL_PROFIT NUMERIC);
```



Generating test data Using dbforgesql Studio