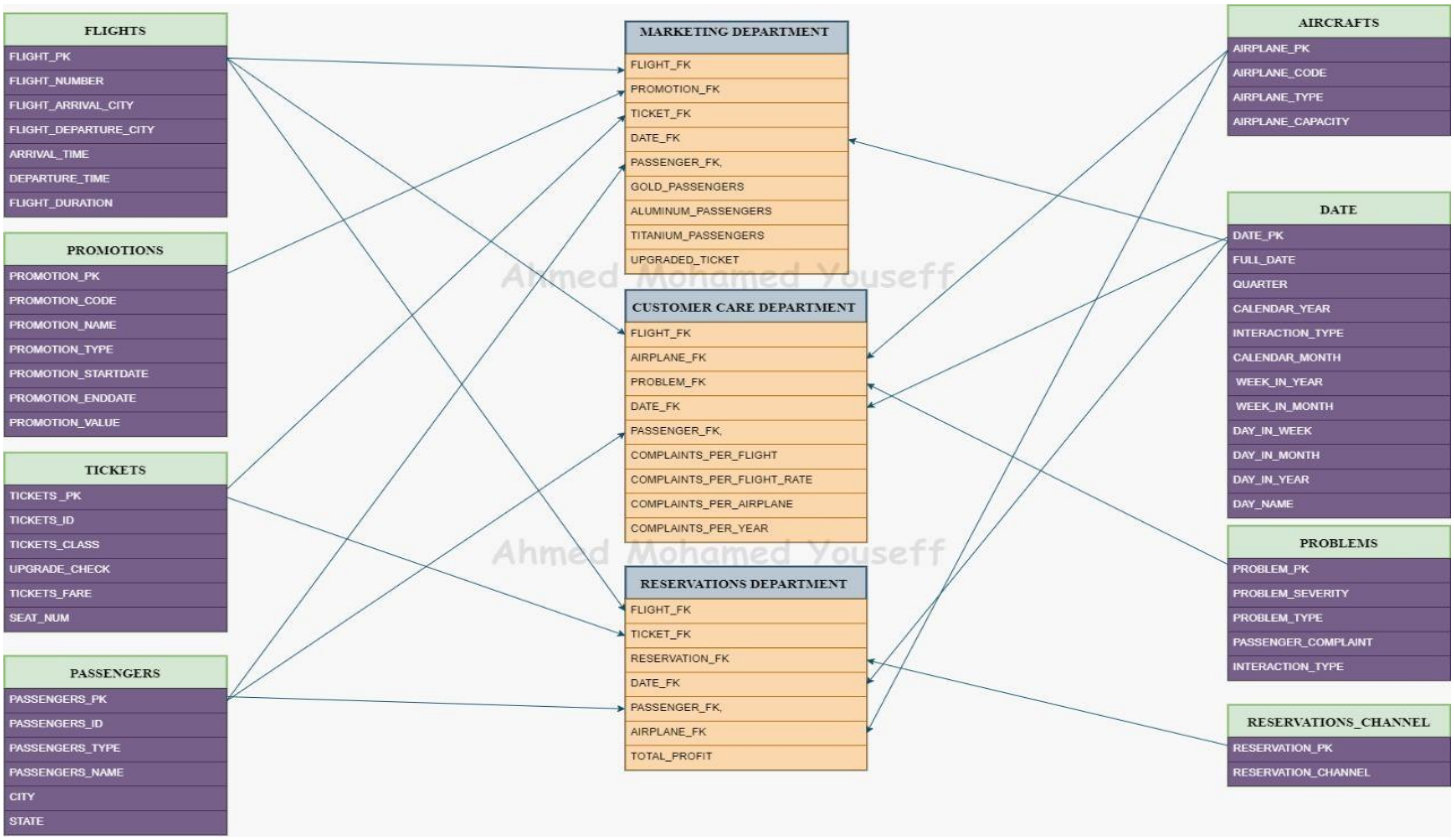
Name : Reham Mohamady

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

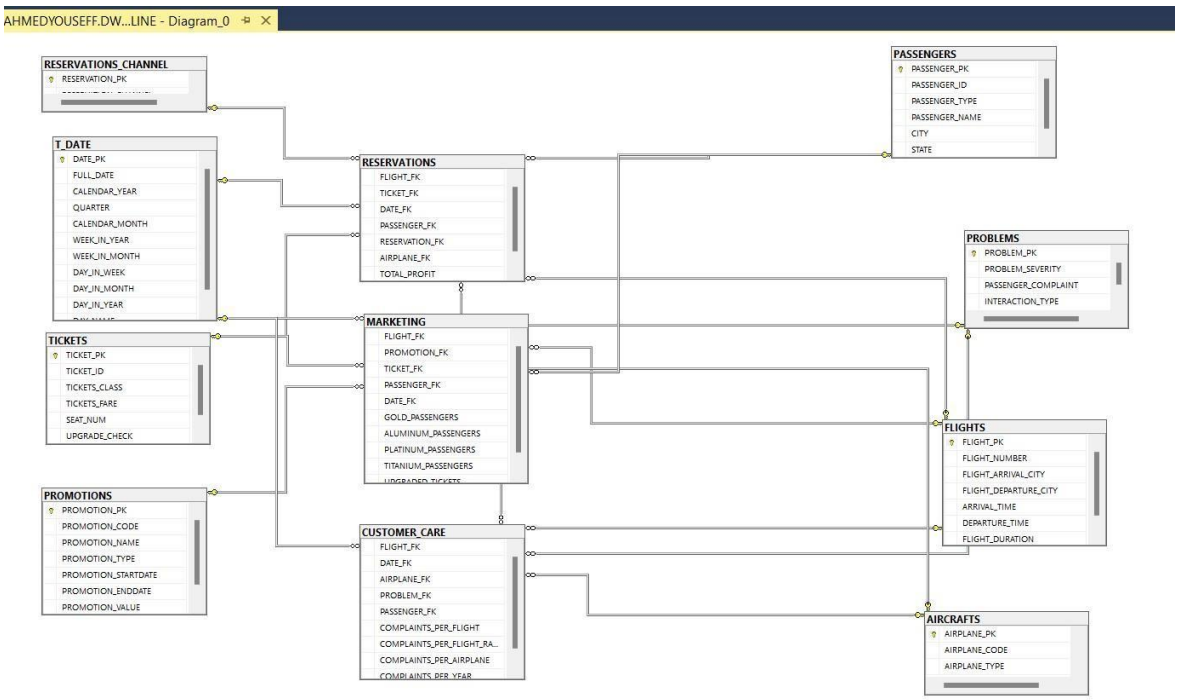
- **Passengers** : cover personal information of passenger and traveling miles and their type (Aluminum, Gold, Platinum, or Titanium)
- **Date** : represents the date at which the ticket has been bought and other important dates
- **Tickets** : cover the reserved ticket and the seat number. Upgrade column 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

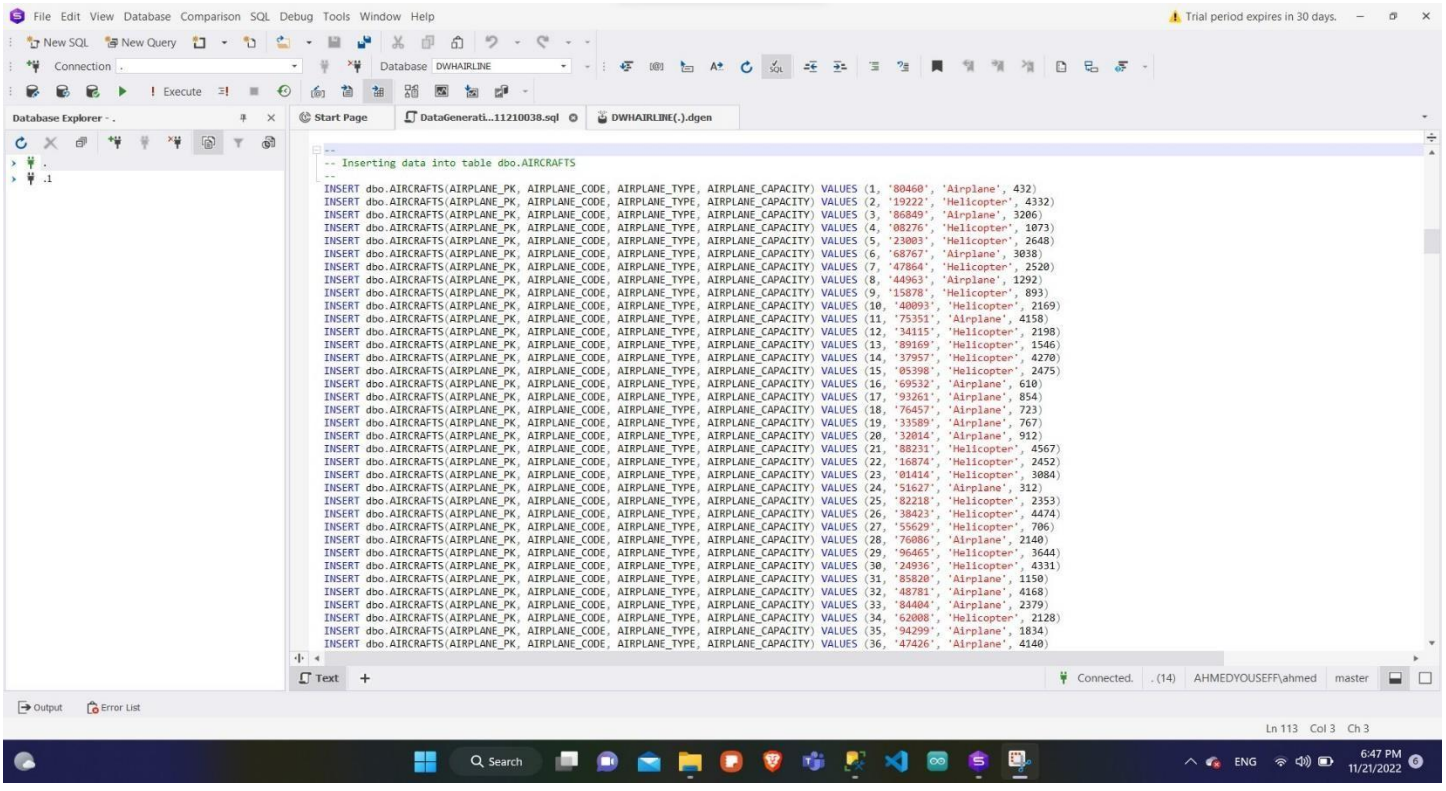
Use SQL Server To Create Table And Schema

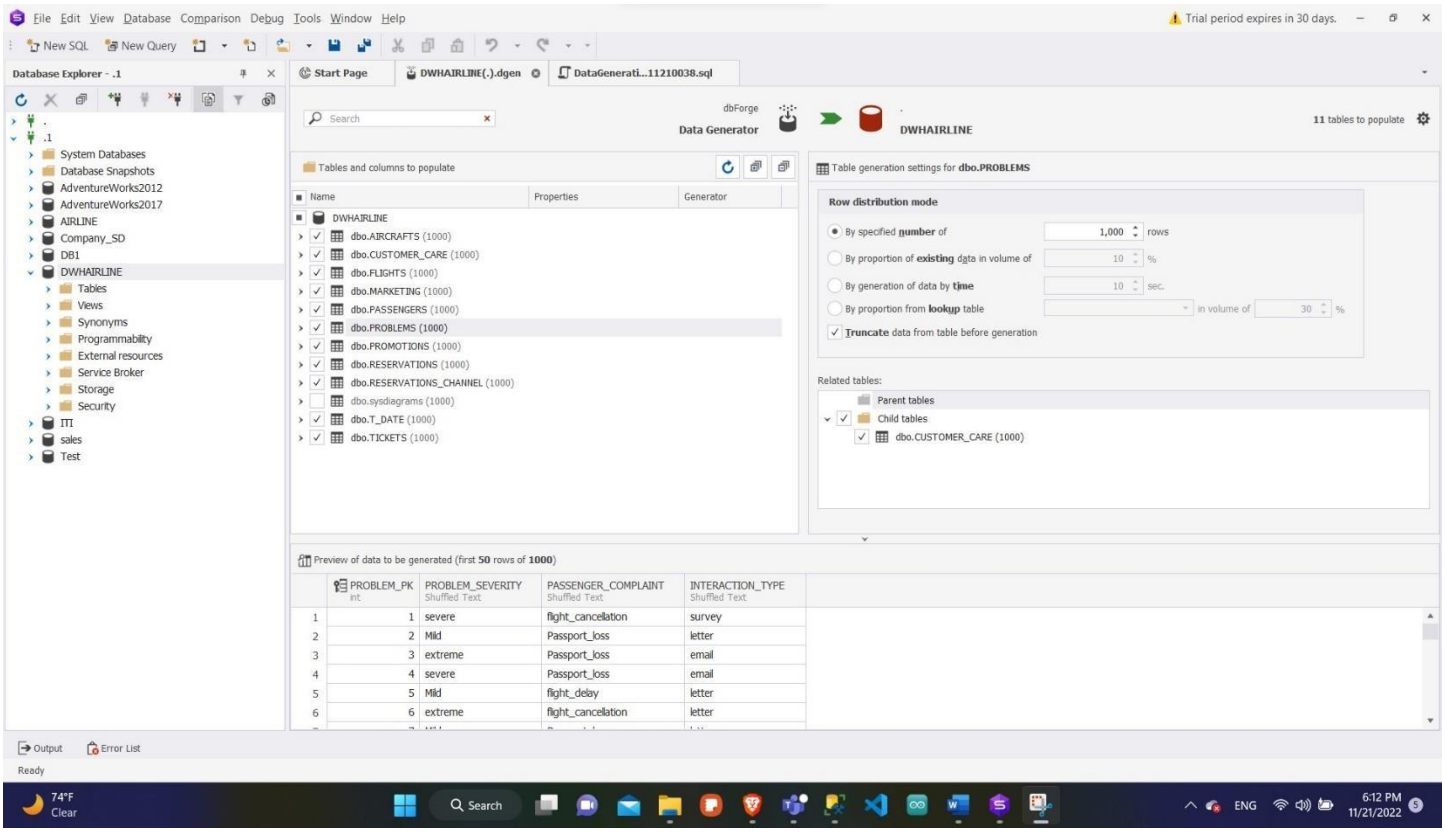
```
--Ahmed Mohamed Youseff
USE DWHAIRLINE
----Create Dimension Tables
CREATE TABLE TICKETS (
                TICKET_PK INT PRIMARY KEY,
                TICKET_ID VARCHAR(100),
                TICKETS_CLASS VARCHAR(100),
                TICKETS_FARE NUMERIC,
                        SEAT_NUM NUMERIC(4),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




File Edit View Database Comparison Debug Tools Window Help
Trial period expires in 30 days.
New SQL
New Query
Database Explorer - .1
Start Page
DWHAIRLINE(.).dgen
DataGenerati...11210038.sql
Search
dbForge
Data Generator
DWHAIRLINE
11 tables to populate
Tables and columns to populate
Name
Properties
Generator
DWHAIRLINE
dbo.AIRCRAFTS (1000)
dbo.CUSTOMER_CARE (1000)
dbo.FLIGHTS (1000)
dbo.MARKETING (1000)
dbo.PASSENGERS (1000)
dbo.PROBLEMS (1000)
dbo.PROMOTIONS (1000)
dbo.RESERVATIONS (1000)
dbo.RESERVATIONS_CHANNEL (1000)
dbo.sysdiagrams (1000)
dbo.T_DATE (1000)
dbo.TICKETS (1000)
Table generation settings for dbo.PROBLEMS
Row distribution mode
By specified number of
1,000
rows
By proportion of existing data in volume of
By generation of data by time
sec.
By proportion from lookup table
in volume of
Truncate data from table before generation
Related tables:
Parent tables
Child tables
dbo.CUSTOMER_CARE (1000)
Preview of data to be generated (first 50 rows of 1000)
PROBLEM_PK
int
PROBLEM_SEVERITY
Shuffled Text
PASSENGER_COMPLAINT
Shuffled Text
INTERACTION_TYPE
Shuffled Text
1 1 severe flight_cancelation survey
2 2 Mild Passport_loss letter
3 3 extreme Passport_loss email
4 4 severe Passport_loss email
5 5 Mild flight_delay letter
6 6 extreme flight_cancelation letter
Output
Error List
Ready
74°F
Clear
Search
ENG
6:12 PM
11/21/2022