Day 3 - SubQueries

Create Database
CREATE DATABASE AirlinesDB;
USE AirlinesDB;

Create Tables
CREATE TABLE air_passenger_profile (
    PROFILE_ID INT IDENTITY(1001,1) PRIMARY KEY,
    PASSWORD VARCHAR(10),
    FIRST_NAME VARCHAR(10),
    LAST_NAME VARCHAR(10),
    ADDRESS VARCHAR(100),
    MOBILE_NUMBER BIGINT,
    EMAIL_ID VARCHAR(30)
);

CREATE TABLE air_credit_card_details (
    CARD_NUMBER BIGINT PRIMARY KEY,
    PROFILE_ID INT NOT NULL,
    CARD_TYPE VARCHAR(10),
    EXPIRATION_MONTH INT,
    EXPIRATION_YEAR INT,
    CONSTRAINT FK_Card_Profile
        FOREIGN KEY(PROFILE_ID)
        REFERENCES air_passenger_profile(PROFILE_ID)
);

CREATE TABLE air_flight (
    FLIGHT_ID INT IDENTITY(2001,1) PRIMARY KEY,
    AIRLINE_ID VARCHAR(10),
    AIRLINE_NAME VARCHAR(30),
    FROM_LOCATION VARCHAR(20),
    TO_LOCATION VARCHAR(20),
    DEPARTURE_TIME TIME,
    ARRIVAL_TIME TIME,
    DURATION TIME,
    TOTAL_SEATS INT
);

CREATE TABLE air_flight_details (
    FLIGHT_DETAIL_ID INT IDENTITY(3001,1) PRIMARY KEY,
    FLIGHT_ID INT NOT NULL,
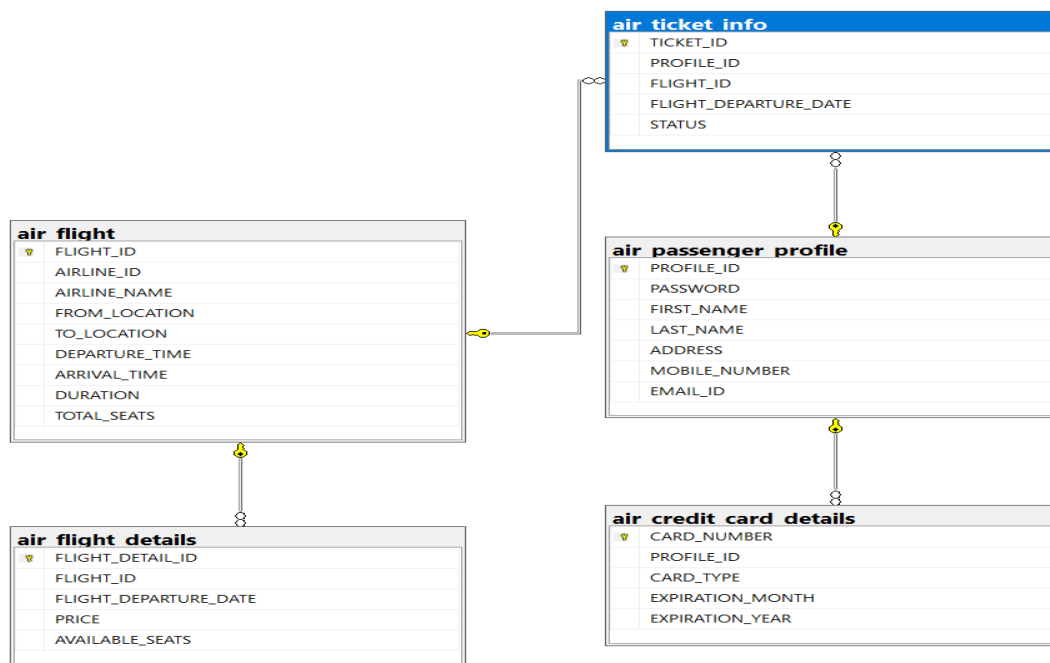
```
    FLIGHT_DEPARTURE_DATE DATE,
    PRICE DECIMAL(8,2),
    AVAILABLE_SEATS INT,
    CONSTRAINT FK_FlightDetails_Flight
        FOREIGN KEY(FLIGHT_ID)
        REFERENCES air_flight(FLIGHT_ID)
);

CREATE TABLE air_ticket_info (
    TICKET_ID INT IDENTITY(4001,1) PRIMARY KEY,
    PROFILE_ID INT NOT NULL,
    FLIGHT_ID INT NOT NULL,
    FLIGHT_DEPARTURE_DATE DATE,
    STATUS VARCHAR(10),
    CONSTRAINT FK_Ticket_Profile
        FOREIGN KEY(PROFILE_ID)
        REFERENCES air_passenger_profile(PROFILE_ID),
    CONSTRAINT FK_Ticket_Flight
        FOREIGN KEY(FLIGHT_ID)
        REFERENCES air_flight(FLIGHT_ID)
);
```

Database Diagram

Insert Values

INSERT INTO air_passenger_profile
(PASSWORD,FIRST_NAME,LAST_NAME,ADDRESS,MOBILE_NUMBER,EMAIL_ID)
VALUES
('pw101','Aarav','Reddy','Chennai',9876543210,'aarav@mail.com'),
('pw102','Isha','Mehta','Hyderabad',9876543211,'isha@mail.com'),
('pw103','Rohan','Kapoor','Bangalore',9876543212,'rohan@mail.com'),
('pw104','Sneha','Nair','Chennai',9876543213,'sneha@mail.com'),
('pw105','Karan','Shah','Pune',9876543214,'karan@mail.com');

INSERT INTO air_credit_card_details
(CARD_NUMBER,PROFILE_ID,CARD_TYPE,EXPIRATION_MONTH,EXPIRATION_YEAR)
VALUES
(4111111111111111,1001,'VISA',12,2028),
(4222222222222222,1002,'MASTER',10,2027),
(4333333333333333,1003,'VISA',8,2029),
(4444444444444444,1004,'RUPAY',5,2030),
(4555555555555555,1005,'VISA',3,2026);

INSERT INTO air_flight
(AIRLINE_ID,AIRLINE_NAME,FROM_LOCATION,TO_LOCATION,DEPARTURE_TIME,ARRIVAL_TIME,DURATION,TOTAL_SEATS)
VALUES
('A01','ABC AIRLINES','Chennai','Hyderabad','08:00','09:30','01:30',180),
('A01','ABC AIRLINES','Hyderabad','Chennai','12:00','13:30','01:30',180),
('A02','Air India','Chennai','Bangalore','10:00','11:15','01:15',160),
('A03','Vistara','Bangalore','Hyderabad','15:00','16:30','01:30',150);

INSERT INTO air_flight_details
(FLIGHT_ID,FLIGHT_DEPARTURE_DATE,PRICE,AVAILABLE_SEATS)
VALUES
(2001,'2025-03-10',4500,60),
(2001,'2025-04-12',4800,55),
(2001,'2025-04-25',5000,50),
(2002,'2025-04-15',4200,65),
(2003,'2025-02-20',4000,70),
(2003,'2025-03-18',4200,66),
(2004,'2025-04-05',4600,72),
(2004,'2025-05-10',4700,68);

INSERT INTO air_ticket_info
(PROFILE_ID,FLIGHT_ID,FLIGHT_DEPARTURE_DATE,STATUS)
VALUES

(1001,2001,'2025-03-10','BOOKED'),
(1001,2001,'2025-04-12','BOOKED'),
(1001,2003,'2025-03-18','BOOKED'),
(1002,2001,'2025-04-12','BOOKED'),
(1002,2004,'2025-04-05','BOOKED'),
(1003,2002,'2025-04-15','BOOKED'),
(1004,2001,'2025-04-25','BOOKED'),
(1004,2004,'2025-05-10','BOOKED'),
(1005,2003,'2025-02-20','BOOKED');

Queries

1.Write a query to display the average monthly cket cost for each flight in ABC Airlines. The query should display the Flight_Id, From_loca on, To_Loca on, Month Name as "Month_Name" and average price as "Average_Price". Display the records sorted in ascending order based on flight id and then by Month Name.

```
SELECT f.FLIGHT_ID,
    f.FROM_LOCATION,
    f.TO_LOCATION,
    DATENAME(MONTH,d.FLIGHT_DEPARTURE_DATE) AS Month_Name,
    AVG(d.PRICE) AS Average_Price
FROM air_flight f
JOIN air_flight_details d
    ON f.FLIGHT_ID=d.FLIGHT_ID
WHERE f.AIRLINE_NAME='ABC AIRLINES'
GROUP BY f.FLIGHT_ID,f.FROM_LOCATION,f.TO_LOCATION,
    DATENAME(MONTH,d.FLIGHT_DEPARTURE_DATE)
ORDER BY f.FLIGHT_ID,Month_Name;
```

	FLIGHT_ID	FROM_LOCATION	TO_LOCATION	Month_Name	Average_Price
1	2001	Chennai	Hyderabad	April	4900.000000
2	2001	Chennai	Hyderabad	March	4500.000000
3	2002	Hyderabad	Chennai	April	4200.000000

2.Write a query to display the customer(s) who has/have booked least number of tickets in ABC Airlines. The Query should display profile_id, customer's first_name, Address and Number of tickets booked as "No_of_Tickets". Display the records sorted in ascending order based on customer's first name.

```
SELECT p.PROFILE_ID,p.FIRST_NAME,p.ADDRESS,
     COUNT(*) AS No_of_Tickets
FROM air_passenger_profile p
JOIN air_ticket_info t ON p.PROFILE_ID=t.PROFILE_ID
GROUP BY p.PROFILE_ID,p.FIRST_NAME,p.ADDRESS
HAVING COUNT(*) =
(
  SELECT MIN(cnt)
  FROM (
      SELECT COUNT(*) cnt
      FROM air_ticket_info
      GROUP BY PROFILE_ID
  ) as x
)
ORDER BY p.FIRST_NAME;
```

	PROFILE_ID	FIRST_NAME	ADDRESS	No_of_Tickets
1	1005	Karan	Pune	1
2	1003	Rohan	Bangalore	1

3.Write a query to display the number of flight services between locations in a month. The Query should display From_Loca on, To_Loca on, Month as "Month_Name" and number of flight services as "No_of_Services". Hint: The Number of Services can be calculated from the number of scheduled departure dates of a flight. The records should be displayed in ascending order based on From_Loca on and then by To_Loca on and then by month name.

```
SELECT f.FROM_LOCATION,f.TO_LOCATION,
     DATENAME(MONTH,d.FLIGHT_DEPARTURE_DATE) AS Month_Name,
     COUNT(*) AS No_of_Services
FROM air_flight f
JOIN air_flight_details d ON f.FLIGHT_ID=d.FLIGHT_ID
GROUP BY f.FROM_LOCATION,f.TO_LOCATION,
```

DATENAME(MONTH,d.FLIGHT_DEPARTURE_DATE)
ORDER BY f.FROM_LOCATION,f.TO_LOCATION,Month_Name;

	FROM_LOCATION	TO_LOCATION	Month_Name	No_of_Services
1	Bangalore	Hyderabad	April	1
2	Bangalore	Hyderabad	May	1
3	Chennai	Bangalore	February	1
4	Chennai	Bangalore	March	1
5	Chennai	Hyderabad	April	2
6	Chennai	Hyderabad	March	1
7	Hyderabad	Chennai	April	1

4.Write a query to display the customer(s) who has/have booked maximum number of tickets in ABC Airlines. The Query should display profile_id, customer's first_name, Address and Number of tickets booked as "No_of_Tickets". Display the records in ascending order based on customer's first name.

```
SELECT p.PROFILE_ID,
     p.FIRST_NAME,
     p.ADDRESS,
     COUNT(*) AS No_of_Tickets
FROM air_passenger_profile p
JOIN air_ticket_info t
   ON p.PROFILE_ID = t.PROFILE_ID
JOIN air_flight f
   ON t.FLIGHT_ID = f.FLIGHT_ID
WHERE f.AIRLINE_NAME = 'ABC AIRLINES'
GROUP BY p.PROFILE_ID,p.FIRST_NAME,p.ADDRESS
HAVING COUNT(*) = (
     SELECT MAX(cnt)
     FROM (
        SELECT COUNT(*) cnt
        FROM air_ticket_info t2
        JOIN air_flight f2
           ON t2.FLIGHT_ID = f2.FLIGHT_ID
        WHERE f2.AIRLINE_NAME = 'ABC AIRLINES'
        GROUP BY t2.PROFILE_ID
```

```
    ) as x
)
ORDER BY p.FIRST_NAME;
```

	PROFILE_ID	FIRST_NAME	ADDRESS	No_of_Tickets
1	1001	Aarav	Chennai	2

5.Write a query to display the number of tickets booked from Chennai to Hyderabad. The Query should display passenger profile_id,first_name,last_name, Flight_Id , Departure_Date and number of tickets booked as "No_of_Tickets". Display the records sorted in ascending order based on profile id and then by flight id and then by departure date.

```
SELECT p.PROFILE_ID,p.FIRST_NAME,p.LAST_NAME,
    f.FLIGHT_ID,t.FLIGHT_DEPARTURE_DATE,
    COUNT(*) AS No_of_Tickets
FROM air_passenger_profile p
JOIN air_ticket_info t ON p.PROFILE_ID=t.PROFILE_ID
JOIN air_flight f ON t.FLIGHT_ID=f.FLIGHT_ID
WHERE f.FROM_LOCATION='Chennai'
 AND f.TO_LOCATION='Hyderabad'
GROUP BY p.PROFILE_ID,p.FIRST_NAME,p.LAST_NAME,
    f.FLIGHT_ID,t.FLIGHT_DEPARTURE_DATE
ORDER BY p.PROFILE_ID,f.FLIGHT_ID,t.FLIGHT_DEPARTURE_DATE;
```

	PROFILE_ID	FIRST_NAME	LAST_NAME	FLIGHT_ID	FLIGHT_DEPARTURE_DATE	No_of_Tickets
1	1001	Aarav	Reddy	2001	2025-03-10	1
2	1001	Aarav	Reddy	2001	2025-04-12	1
3	1002	Isha	Mehta	2001	2025-04-12	1
4	1004	Sneha	Nair	2001	2025-04-25	1

6. Write a query to display flight id,from loca on, to loca on and ticket price of flights whose departure is in the month of april.

SELECT f.FLIGHT_ID,f.FROM_LOCATION,f.TO_LOCATION,d.PRICE
FROM air_flight f
JOIN air_flight_details d ON f.FLIGHT_ID=d.FLIGHT_ID
WHERE MONTH(d.FLIGHT_DEPARTURE_DATE)=4;

	FLIGHT_ID	FROM_LOCATION	TO_LOCATION	PRICE
1	2001	Chennai	Hyderabad	4800.00
2	2001	Chennai	Hyderabad	5000.00
3	2002	Hyderabad	Chennai	4200.00
4	2004	Bangalore	Hyderabad	4600.00

7. Write a query to display the average cost of the tickets in each flight on all scheduled dates. The query should display flight_id, from_location, to_location and Average price as "Price". Display the records sorted in ascending order based on flight id and then by from_location and then by to_location.

SELECT f.FLIGHT_ID,f.FROM_LOCATION,f.TO_LOCATION,
      AVG(d.PRICE) AS Price
FROM air_flight f
JOIN air_flight_details d ON f.FLIGHT_ID=d.FLIGHT_ID
GROUP BY f.FLIGHT_ID,f.FROM_LOCATION,f.TO_LOCATION
ORDER BY f.FLIGHT_ID,f.FROM_LOCATION,f.TO_LOCATION;

	FLIGHT_ID	FROM_LOCATION	TO_LOCATION	Price
1	2001	Chennai	Hyderabad	4766.666666
2	2002	Hyderabad	Chennai	4200.000000
3	2003	Chennai	Bangalore	4100.000000
4	2004	Bangalore	Hyderabad	4650.000000

8. Write a query to display the customers who have booked tickets from Chennai to Hyderabad. The query should display profile_id, customer_name (combine first_name & last_name with comma in b/w), address of the customer. Give an alias to the name as customer_name. Hint: Query should fetch unique customers irrespective of multiple tickets booked. Display the records sorted in ascending order based on profile id.

```
SELECT DISTINCT p.PROFILE_ID,
     p.FIRST_NAME + ',' + p.LAST_NAME AS customer_name,
     p.ADDRESS
FROM air_passenger_profile p
JOIN air_ticket_info t ON p.PROFILE_ID=t.PROFILE_ID
JOIN air_flight f ON t.FLIGHT_ID=f.FLIGHT_ID
WHERE f.FROM_LOCATION='Chennai'
  AND f.TO_LOCATION='Hyderabad'
ORDER BY p.PROFILE_ID;
```

	PROFILE_ID	customer_name	ADDRESS
1	1001	Aarav,Reddy	Chennai
2	1002	Isha,Mehta	Hyderabad
3	1004	Sneha,Nair	Chennai

9. Write a query to display profile id of the passenger(s) who has/have booked maximum number of tickets. In case of multiple records, display the records sorted in ascending order based on profile id.

```
SELECT PROFILE_ID
FROM air_ticket_info
GROUP BY PROFILE_ID
HAVING COUNT(*) =
(
 SELECT MAX(cnt)
 FROM (
    SELECT COUNT(*) cnt
    FROM air_ticket_info
    GROUP BY PROFILE_ID
 ) as x
)
ORDER BY PROFILE_ID;
```

	PROFILE_ID
1	1001

10. Write a query to display the total number of tickets as "No_of_Tickets" booked in each flight in ABC Airlines. The Query should display the flight_id, from_location, to_location and the number of tickets. Display only the flights in which at least 1 ticket is booked. Display the records sorted in ascending order based on flight id.

```
SELECT FLIGHT_ID,FROM_LOCATION,TO_LOCATION,No_of_Tickets
FROM (
    SELECT f.FLIGHT_ID,f.FROM_LOCATION,f.TO_LOCATION,
        COUNT(t.TICKET_ID) AS No_of_Tickets
    FROM air_flight f
    JOIN air_ticket_info t
        ON f.FLIGHT_ID=t.FLIGHT_ID
    WHERE f.AIRLINE_NAME='ABC AIRLINES'
    GROUP BY f.FLIGHT_ID,f.FROM_LOCATION,f.TO_LOCATION
) as x
WHERE No_of_Tickets>0
ORDER BY FLIGHT_ID;
```

	FLIGHT_ID	FROM_LOCATION	TO_LOCATION	No_of_Tickets
1	2001	Chennai	Hyderabad	4
2	2002	Hyderabad	Chennai	1