

Date : 31-12-25

Day 3 Subqueries, Set Operators & CTEs

```
CREATE TABLE air_passenger_profile (  
    PROFILE_ID INT IDENTITY(1,1) PRIMARY KEY,  
    PASSWORD VARCHAR(10) NOT NULL,  
    FIRST_NAME VARCHAR(10) NOT NULL,  
    LAST_NAME VARCHAR(10) NOT NULL,  
    ADDRESS VARCHAR(100) NULL,  
    MOBILE_NUMBER BIGINT NOT NULL,  
    EMAIL_ID VARCHAR(30) NULL  
);
```

```
CREATE TABLE air_flight (  
    FLIGHT_ID INT IDENTITY(1,1) PRIMARY KEY,  
    AIRLINE_ID VARCHAR(10) NOT NULL,  
    AIRLINE_NAME VARCHAR(30) NOT NULL,  
    FROM_LOCATION VARCHAR(20) NOT NULL,  
    TO_LOCATION VARCHAR(20) NOT NULL,  
    DEPARTURE_TIME TIME NOT NULL,  
    ARRIVAL_TIME TIME NOT NULL,  
    DURATION TIME NULL,  
    TOTAL_SEATS INT NOT NULL  
);
```

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

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

```
CREATE TABLE air_credit_card_details (  
    CARD_ID INT IDENTITY(1,1) PRIMARY KEY,  
    PROFILE_ID INT NOT NULL,  
    CARD_NUMBER BIGINT NOT NULL,  
    CARD_TYPE VARCHAR(10) NOT NULL,  
    EXPIRATION_MONTH INT NOT NULL,  
    EXPIRATION_YEAR INT NOT NULL,
```

```
);  
FOREIGN KEY (PROFILE_ID) REFERENCES air_passenger_profile(PROFILE_ID)
```

```
INSERT INTO air_passenger_profile  
(PASSWORD, FIRST_NAME, LAST_NAME, ADDRESS, MOBILE_NUMBER, EMAIL_ID)  
VALUES  
( 'pass01', 'Rahul', 'Sharma', 'Delhi', 9876543210, 'rahul@gmail.com'),  
( 'pass02', 'Anita', 'Verma', 'Mumbai', 9876543211, 'anita@gmail.com'),  
( 'pass03', 'Suresh', 'Reddy', 'Hyderabad', 9876543212, 'suresh@gmail.com'),  
( 'pass04', 'Priya', 'Singh', 'Chennai', 9876543213, 'priya@gmail.com'),  
( 'pass05', 'Amit', 'Kumar', 'Bangalore', 9876543214, 'amit@gmail.com');
```

```
INSERT INTO air_flight  
(AIRLINE_ID, AIRLINE_NAME, FROM_LOCATION, TO_LOCATION,  
DEPARTURE_TIME, ARRIVAL_TIME, DURATION, TOTAL_SEATS)  
VALUES  
( 'AI01', 'Air India', 'Delhi', 'Mumbai', '08:00', '10:00', '02:00', 180),  
( 'IN02', 'Indigo', 'Hyderabad', 'Chennai', '09:30', '10:45', '01:15', 150),  
( 'SP03', 'SpiceJet', 'Bangalore', 'Delhi', '06:00', '08:45', '02:45', 160),  
( 'VI04', 'Vistara', 'Mumbai', 'Kolkata', '11:00', '13:30', '02:30', 170),  
( 'G005', 'GoAir', 'Pune', 'Hyderabad', '14:00', '15:30', '01:30', 140);
```

```
INSERT INTO air_flight_details  
(FLIGHT_ID, FLIGHT_DEPARTURE_DATE, PRICE, AVAILABLE_SEATS)  
VALUES  
(1, '2025-01-10', 5500, 120),  
(2, '2025-01-12', 4200, 100),  
(3, '2025-01-15', 6200, 90),  
(4, '2025-01-18', 5800, 110),  
(5, '2025-01-20', 4000, 95);
```

```
INSERT INTO air_ticket_info  
(PROFILE_ID, FLIGHT_ID, FLIGHT_DEPARTURE_DATE, STATUS)  
VALUES  
(1, 1, '2025-01-10', 'Booked'),  
(2, 2, '2025-01-12', 'Booked'),  
(3, 3, '2025-01-15', 'Cancelled'),  
(4, 4, '2025-01-18', 'Booked'),  
(5, 5, '2025-01-20', 'Booked');
```

```
INSERT INTO air_credit_card_details  
(PROFILE_ID, CARD_NUMBER, CARD_TYPE, EXPIRATION_MONTH, EXPIRATION_YEAR)  
VALUES  
(1, 4111222233334444, 'VISA', 12, 2026),  
(2, 5111222233334445, 'MASTER', 11, 2025),  
(3, 6111222233334446, 'RUPAY', 10, 2027),  
(4, 7111222233334447, 'VISA', 9, 2026),  
(5, 8111222233334448, 'MASTER', 8, 2025);
```

```
select * from air_credit_card_details;  
select * from air_flight;  
select * from air_flight_details;  
select * from air_passenger_profile;
```

```
select * from air_ticket_info;
```

1.

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

2.

```
SELECT
    p.PROFILE_ID,
    p.FIRST_NAME,
    p.ADDRESS,
    COUNT(t.TICKET_ID) 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(t.TICKET_ID) = (
    SELECT MIN(ticket_count)
    FROM (
        SELECT COUNT(*) AS ticket_count
        FROM air_ticket_info
        GROUP BY PROFILE_ID
    ) x
)
ORDER BY p.FIRST_NAME;
```

	PROFILE_ID	FIRST_NAME	ADDRESS	No_of_Tickets
1	5	Amit	Bangalore	1
2	2	Anita	Mumbai	1
3	4	Priya	Chennai	1
4	1	Rahul	Delhi	1
5	3	Suresh	Hyderabad	1

3.

```
SELECT
```

```

        f.FROM_LOCATION,
        f.TO_LOCATION,
        DATENAME(MONTH, fd.FLIGHT_DEPARTURE_DATE) AS Month_Name,
        COUNT(fd.FLIGHT_DEPARTURE_DATE) AS No_of_Services
FROM air_flight f
JOIN air_flight_details fd
    ON f.FLIGHT_ID = fd.FLIGHT_ID
GROUP BY
    f.FROM_LOCATION,
    f.TO_LOCATION,
    DATENAME(MONTH, fd.FLIGHT_DEPARTURE_DATE),
    MONTH(fd.FLIGHT_DEPARTURE_DATE)
ORDER BY
    f.FROM_LOCATION,
    f.TO_LOCATION,
    MONTH(fd.FLIGHT_DEPARTURE_DATE);

```

	FROM_LOCATION	TO_LOCATION	Month_Name	No_of_Services
1	Bangalore	Delhi	January	1
2	Delhi	Mumbai	January	1
3	Hyderabad	Chennai	January	1
4	Mumbai	Kolkata	January	1
5	Pune	Hyderabad	January	1

4.

```

SELECT
    p.PROFILE_ID,
    p.FIRST_NAME,
    p.ADDRESS,
    COUNT(t.TICKET_ID) 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(t.TICKET_ID) = (
    SELECT MAX(ticket_count)
    FROM (
        SELECT COUNT(*) AS ticket_count
        FROM air_ticket_info
        GROUP BY PROFILE_ID
    ) x
)
ORDER BY p.FIRST_NAME;

```

	PROFILE_ID	FIRST_NAME	ADDRESS	No_of_Tickets
1	5	Amit	Bangalore	1
2	2	Anita	Mumbai	1
3	4	Priya	Chennai	1
4	1	Rahul	Delhi	1
5	3	Suresh	Hyderabad	1

5.

```

SELECT
    p.PROFILE_ID,
    p.FIRST_NAME,
    p.LAST_NAME,

```

```

        f.FLIGHT_ID,
        t.FLIGHT_DEPARTURE_DATE,
        COUNT(t.TICKET_ID) AS No_of_Tickets
FROM air_ticket_info t
JOIN air_passenger_profile p
    ON t.PROFILE_ID = p.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;

```

6.

```

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

```

7.

```

SELECT
    f.FLIGHT_ID,
    f.FROM_LOCATION,
    f.TO_LOCATION,
    AVG(fd.PRICE) AS Price
FROM air_flight f
JOIN air_flight_details fd
    ON f.FLIGHT_ID = fd.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	1	Delhi	Mumbai	5500.000000
2	2	Hyderabad	Chennai	4200.000000
3	3	Bangalore	Delhi	6200.000000
4	4	Mumbai	Kolkata	5800.000000
5	5	Pune	Hyderabad	4000.000000

8.

```
SELECT DISTINCT
  p.PROFILE_ID,
  CONCAT(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 ASC;
```

9.

```
SELECT PROFILE_ID
FROM air_ticket_info
GROUP BY PROFILE_ID
HAVING COUNT(*) = (
  SELECT MAX(ticket_count)
  FROM (
    SELECT COUNT(*) AS ticket_count
    FROM air_ticket_info
    GROUP BY PROFILE_ID
  ) AS temp
)
ORDER BY PROFILE_ID ASC;
```

	PROFILE_ID
1	1
2	2
3	3
4	4
5	5

10.

```
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
HAVING COUNT(t.TICKET_ID) >= 1
ORDER BY f.FLIGHT_ID ASC;
```