Day 3 Assignment - Subqueries, Set Operators & CTEs
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1.Create Database

```
Create database AirDB;
```

2.Create Tables

```
Create table air_passenger_profile (
   profile_id      varchar (10)   PRIMARY KEY,
   password         varchar100) Not NULL,
   first_name       varchar(50)  Not NULL,
   last_name        varchar(50)  Not NULL,
   address          varchar(255),
   mobile_number   int       Not NULL,
   email_id         varchar(100) Not NULL UNIQUE
);

Create table air_flight (
   flight_id         varcharR(10)  PRIMARY KEY,
   airline_id        varchar(10) Not NULL,
   airline_name      varchar(50) Not NULL,
   from_location     varchar(30) Not NULL,
   to_location       varchar(30) Not NULL,
   departure_time   TIME        Not NULL,
   arrival_time     TIME        Not NULL,
   duration_time     varchar(10),
   total_seats      int         Not NULL
);

Create table  air_flight_details (
   flight_id             varchar(10) Not NULL,
   flight_departure_date DATE        Not NULL,
   price                 DECIMAL(10,2) Not NULL,
   available_seats       int Not NULL,
   Constraint pk_flight_details
      PRIMARY KEY (flight_id, flight_departure_date),
    Constraint fk_flight_details_flight
      FOREIGN KEY (flight_id)
      REFERENCES air_flight(flight_id)
);

Create table air_ticket_info (
   ticket_id             varchar(10) PRIMARY KEY,
   profile_id            varchar10) NOT NULL,
   flight_id             varchar(10) NOT NULL,
   flight_departure_date DATE NOT NULL,
```

```
    status              varchar(20) Not NULL,
     Constraintfk_ticket_profile
        FOREIGN KEY (profile_id)
        REFERENCES air_passenger_profile(profile_id),
     Constraint fk_ticket_flight
        FOREIGN KEY (flight_id, flight_departure_date)
        REFERENCES air_flight_details(flight_id, flight_departure_date)
);

Create table air_credit_card_details (
    profile_id       varchar(10) Not NULL,
    card_number      int      Not NULL,
    card_type        varchar(20) Not NULL,
    expiration_month  int     Not NULL CHECK (expiration_month BETWEEN 1 AND 12),
    expiration_year   int    Not NULL,
    Constraint pk_card
        PRIMARY KEY (profile_id, card_number),
     Constraint fk_card_profile
        FOREIGN KEY (profile_id)
        REFERENCES air_passenger_profile(profile_id)
);
```

3.Insert Values

Table name - air_passenger_profile

```
insert into air_passenger_profile
(profile_id, password, first_name, last_name, address, mobile_number, email_id)
values
('P001','p1','Ravi','Kumar','Chennai',9876500011,'ravi@gmail.com'),
('P002','p2','Anita','Shah','Hyderabad',9876500022,'anita@gmail.com'),
('P003','p3','Kiran','Rao','Bangalore',9876500033,'kiran@gmail.com'),
('P004','p4','Neha','Verma','Chennai',9876500044,'neha@gmail.com'),
('P005','p5','Amit','Patel','Mumbai',9876500055,'amit@gmail.com');
```

Table name - air_flight

```
insert into air_flight
(flight_id, airline_id, airline_name, from_location, to_location,
 departure_time, arrival_time, duration_time, total_seats)
values
('F101','A001','ABC Airlines','Chennai','Hyderabad','08:00','09:30','1.5Hr',180),
('F102','A001','ABC Airlines','Chennai','Hyderabad','18:00','19:30','1.5Hr',180),
('F201','A002','SkyJet Airways','Chennai','Bangalore','07:00','08:20','1.3Hr',160),
('F202','A003','Indigo Wings','Hyderabad','Delhi','10:00','12:10','2.1Hr',200)
('F101','A001','ABC Airlines','Chennai','Hyderabad','08:00','09:30','1.5Hr',180);
```

Table name - air_flight_details

```
insert into air_flight_details
(flight_id, flight_departure_date, price, available_seats)
```

values
('F101','2025-04-05',5000,140),
('F101','2025-04-20',5200,130),
('F101','2025-05-15',5400,120)
('F101','2025-04-05',5000,140),
('F102','2025-04-07',5100,160),
('F102','2025-05-18',5500,150),
('F201','2025-04-10',4300,145),
('F201','2025-06-12',4600,140),
('F202','2025-04-12',6500,170);

Table name - air_ticket_info
insert into air_ticket_info
(ticket_id, profile_id, flight_id, flight_departure_date, status)
values
('T001','P001','F101','2025-04-05','CONFIRMED'),
('T002','P001','F101','2025-04-20','CONFIRMED'),
('T003','P001','F102','2025-04-07','CONFIRMED'),
('T004','P001','F101','2025-05-15','CONFIRMED'),
('T005','P002','F101','2025-04-05','CONFIRMED'),
('T006','P003','F202','2025-04-12','CONFIRMED'),
('T007','P004','F102','2025-05-18','CONFIRMED'),
('T008','P004','F101','2025-04-20','CONFIRMED'),
('T009','P005','F201','2025-04-10','CONFIRMED')
('T200','P002','F101','2025-04-05','CONFIRMED');

Table name - air_credit_card_details
insert into air_credit_card_details
(profile_id, card_number, card_type, expiration_month, expiration_year)
values
('P001', 4111222233334444, 'VISA', 10, 2030),
('P002', 5111333344445555, 'MASTER', 12, 2031),
('P003', 6111444455556666, 'VISA', 8, 2030),
('P004', 7111555566667777, 'AMEX', 6, 2032),
('P005', 8111666677778888, 'RUPAY', 9, 2033);

4.Queries

4.1 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 af.flight_id,
      af.from_location,
      af.to_location,
      datename (MONTH, afd.flight_departure_date) AS Month_Name,
      avg(afd.price) as Average_Price
FROM air_flight as af
```

```
join air_flight_details afd
on af.flight_id=afd.flight_id
WHERE af.airline_name = 'ABC Airlines'
group by
        af.flight_id,
       af.from_location,
       af.to_location,
       datename (MONTH, afd.flight_departure_date)
order by af.flight_id,
Month_Name ;
```

	flight_id	from_location	to_location	Month_Name	Average_Price
1	F201	Mumbai	Bangalore	April	5600.000000
2	F202	Bangalore	Kolkata	May	6200.000000

4.2 Write a query to display the customer(s) who has/have booked the 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 the customer's first name.

```
select
        ap.profile_id,
        ap.first_name,
        ap.address,
       count(ati.ticket_id) as No_of_Tickets
from
air_ticket_info as ati
join
air_passenger_profile as ap
on ap.profile_id = ati.profile_id
join air_flight_details as afd
on afd.flight_id = ati.flight_id
join
air_flight as af
on af.flight_id = afd.flight_id
group by
           ap.profile_id,
          ap.first_name,
          ap.address,
having count(ati.ticket_id) = (
   select min(ticket_count)
   from (
      select count(ati.ticket_id) as ticket_count
      from air_ticket_info as ati
      join air_passenger_profile as ap
      on ap.profile_id = ati.profile_id
      join air_flight_details as afd
      on afd.flight_id = ati.flight_id
```

```
        join air_flight as af
        on af.flight_id = afd.flight_id
        group by ap.profile_id
    ) as temp1
)order by
            ap.first_name;
```

	profile_id	first_name	address	No_of_Tickets
1	P012	Rahul	Delhi	2
2	P014	Vikram	Pune	2

4.3 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
     af.from_location,
     af.to_location,
     datename (MONTH, afd.flight_departure_date) AS Month_Name,
     count(flight_departure_date) as No_of_Services
from air_flight af
join
air_flight_details afd
on af.flight_id=afd.flight_id
group by
        af.from_location,
     af.to_location,
     datename (MONTH, afd.flight_departure_date)
order by
    af.from_location,
    af.to_location,
    Month_Name;
```

	from_location	to_location	Month_Name	No_of_Services
1	Bangalore	Kolkata	May	1
2	Delhi	Mumbai	April	1
3	Delhi	Mumbai	May	1
4	Mumbai	Bangalore	April	2

4.4 Write a query to display the customer(s) who has/have booked the 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 the customer's first name.

```
select
      pp.profile_id,
      pp.first_name,
      pp.address,
      count(ti.ticket_id) as No_of_Tickets
from
air_passenger_profile pp
join
air_ticket_info ti
on pp.profile_id=ti.profile_id
JOIN air_flight af
   ON ti.flight_id = af.flight_id
where af.airline_name = 'ABC Airlines'
group by pp.profile_id,
   pp.first_name,
   pp.address
HAVING COUNT(ti.ticket_id) = (
   SELECT MAX(ticket_count)
   FROM (
      SELECT COUNT(ti2.ticket_id) AS ticket_count
      FROM air_ticket_info ti2
      JOIN air_flight af2
         ON ti2.flight_id = af2.flight_id
      WHERE af2.airline_name = 'ABC Airlines'
      GROUP BY ti2.profile_id
   ) AS temp
)
order by
      pp.first_name;
```

	profile_id	first_name	address	No_of_Tickets
1	P011	Anita	Mumbai	2
2	P013	Sneha	Coimbatore	2

4.5.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
      pp.profile_id,
      pp.first_name,
      pp.last_name,
      ti.flight_id,
      ti.flight_departure_date,
      count(ti.ticket_id) as No_of_Tickets
```

```
from air_passenger_profile pp
join
air_ticket_info ti
on pp.profile_id=ti.profile_id
join air_flight f
on  ti.flight_id=f.flight_id
where f.from_location='Chennai' and f.to_location='Hyderabad'
group by
      pp.profile_id,
     pp.first_name,
     pp.last_name,
     ti.flight_id,
     ti.flight_departure_date
order by
      pp.profile_id,
      ti.flight_id,
     ti.flight_departure_date;
```

	profile_id	first_name	last_name	flight_id	flight_departure_date	No_of_Tickets
1	P002	Anita	Shah	F101	2025-04-05	1

4.6 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
     af.flight_id,
     af.from_location,
     af.to_location,
     fd.price
from
air_flight af
join
air_flight_details fd
on af.flight_id=fd.flight_id
where datename(Month,fd.flight_departure_date) ='April';
```

	flight_id	from_location	to_location	price
1	F201	Mumbai	Bangalore	5500.00
2	F201	Mumbai	Bangalore	5700.00
3	F203	Delhi	Mumbai	6800.00

4.7 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_loca on, to_loca on 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
     af.flight_id,
     af.from_location,
     af.to_location,
```

```
    avg(afd.price) as Price
from
air_flight af
join
air_flight_details afd
on af.flight_id=afd.flight_id
group by af.flight_id,
    af.from_location,
    af.to_location
order by af.flight_id,
    af.from_location,
    af.to_location;
```

	flight_id	from_location	to_location	Price
1	F201	Mumbai	Bangalore	5600.000000
2	F202	Bangalore	Kolkata	6200.000000
3	F203	Delhi	Mumbai	6900.000000

4.8 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
    pp.profile_id,
    CONCAT(pp.first_name,pp.last_name)as FullName,
    pp.address
from air_passenger_profile pp
join
air_ticket_info ti
on pp.profile_id=ti.profile_id
join air_flight f
on  ti.flight_id=f.flight_id
where f.from_location='Chennai' and f.to_location='Hyderabad'
order by
     pp.profile_id;
```

	profile_id	FullName	address
1	P002	AnitaShah	Hyderabad

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

```
select
pp.profile_id
from air_passenger_profile pp
join
air_ticket_info ti
on pp.profile_id=ti.profile_id
group by pp.profile_id
HAVING COUNT(ti.ticket_id) = (
   SELECT MAX(ticket_count)
   FROM (
      SELECT COUNT(ticket_id) AS ticket_count
      FROM air_ticket_info
      GROUP BY profile_id
   ) AS temp)
order by profile_id;
```

	profile_id
1	P011
2	P013

4.10 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_loca on, to_loca on 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
    af.flight_id,
    af.from_location,
    af.to_location,
    count(ti.ticket_id) as No_of_Tickets
from
air_flight af
join
air_ticket_info ti
on af.flight_id=ti.flight_id
where af.airline_name='ABC Airlines'
group by
       af.flight_id,
    af.from_location,
    af.to_location
    having count(ti.ticket_id)>0
order by
af.flight_id;
```

	flight_id	from_location	to_location	No_of_Tickets
1	F201	Mumbai	Bangalore	3
2	F202	Bangalore	Kolkata	1