30-12-2025 Day 3 – Subqueries, Set Operators & CTEs

1)DataBase Creation:

```
create database airlinesDB;

use airlinesDB;
```

2)Tables Creation:

```
CREATE TABLE air_passenger_profile (
PROFILE_ID VARCHAR(10) 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_flight (
FLIGHT_ID VARCHAR(10) 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_ID VARCHAR(10),
FLIGHT_DEPARTURE_DATE DATE,
PRICE DECIMAL(8,2),
AVAILABLE_SEATS INT,
PRIMARY KEY(FLIGHT_ID, FLIGHT_DEPARTURE_DATE),
FOREIGN KEY (FLIGHT_ID) REFERENCES air_flight(FLIGHT_ID)
);


CREATE TABLE air_ticket_info (
TICKET_ID VARCHAR(10) PRIMARY KEY,
PROFILE_ID VARCHAR(10),
FLIGHT_ID VARCHAR(10),
FLIGHT_DEPARTURE_DATE DATE,
STATUS VARCHAR(10),
FOREIGN KEY (PROFILE_ID) REFERENCES air_passenger_profile(PROFILE_ID),
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),
CARD_NUMBER BIGINT,
CARD_TYPE VARCHAR(10),
EXPIRATION_MONTH INT,
EXPIRATION_YEAR INT,
FOREIGN KEY (PROFILE_ID) REFERENCES air_passenger_profile(PROFILE_ID)
);
```

3)Insertion:

```
INSERT INTO air_passenger_profile VALUES
('P001','pwd1','Amit','Shah','Delhi',9876543210,'amit@gmail.com'),
('P002','pwd2','Bala','Krish','Chennai',9876543211,'bala@gmail.com'),
('P003','pwd3','Charan','Reddy','Hyderabad',9876543212,'charan@gmail.com'),
('P004','pwd4','Divya','Mehta','Mumbai',9876543213,'divya@gmail.com'),
('P005','pwd5','Esha','Singh','Pune',9876543214,'esha@gmail.com'),
('P006','pwd6','Farhan','Ali','Delhi',9876543215,'farhan@gmail.com'),
('P007','pwd7','Gopal','Rao','Chennai',9876543216,'gopal@gmail.com'),
('P008','pwd8','Harish','Kumar','Bangalore',9876543217,'harish@gmail.com'),
('P009','pwd9','Isha','Verma','Hyderabad',9876543218,'isha@gmail.com'),
('P010','pwd10','Jatin','Malik','Noida',9876543219,'jatin@gmail.com');


INSERT INTO air_flight VALUES
('F001','A001','ABC Airlines','Chennai','Hyderabad','08:00','09:30','01:30',180),
('F002','A001','ABC Airlines','Delhi','Mumbai','10:00','12:00','02:00',180),
('F003','A001','ABC Airlines','Bangalore','Chennai','14:00','15:30','01:30',180),
('F004','A001','ABC Airlines','Hyderabad','Delhi','16:00','18:30','02:30',180),
('F005','A002','XYZ Airlines','Mumbai','Pune','09:00','10:00','01:00',150),
('F006','A002','XYZ Airlines','Delhi','Chennai','11:00','14:00','03:00',150),
('F007','A001','ABC Airlines','Chennai','Hyderabad','18:00','19:30','01:30',180),
('F008','A001','ABC Airlines','Mumbai','Delhi','20:00','22:00','02:00',180),
('F009','A002','XYZ Airlines','Bangalore','Hyderabad','07:00','08:30','01:30',150),
('F010','A001','ABC Airlines','Chennai','Bangalore','06:00','07:30','01:30',180);


INSERT INTO air_flight_details VALUES
('F001','2025-04-05',4500,150),
('F001','2025-05-10',4800,145),
('F002','2025-04-15',5500,160),
('F003','2025-06-20',4000,170),
('F004','2025-04-25',6000,155),
('F005','2025-03-18',2500,140),
('F006','2025-04-12',6500,130),
('F007','2025-05-08',4700,150),
('F008','2025-06-02',5200,165),
('F010','2025-04-30',4200,175);


INSERT INTO air_ticket_info VALUES
('T001','P001','F001','2025-04-05','Booked'),
('T002','P001','F001','2025-05-10','Booked'),
('T003','P002','F001','2025-04-05','Booked'),
('T004','P002','F002','2025-04-15','Booked'),
('T005','P003','F003','2025-06-20','Booked'),
('T006','P003','F004','2025-04-25','Booked'),
('T007','P003','F007','2025-05-08','Booked'),
('T008','P004','F006','2025-04-12','Booked'),
('T009','P005','F010','2025-04-30','Booked'),
```

```
('T010','P001','F007','2025-05-08','Booked');


INSERT INTO air_credit_card_details VALUES
('P001',1111222233334444,'VISA',5,2027),
('P002',2222333344445555,'VISA',7,2026),
('P003',3333444455556666,'MC',8,2028),
('P004',4444555566667777,'MC',9,2025),
('P005',5555666677778888,'VISA',10,2027),
('P006',6666777788889999,'MC',11,2026),
('P007',7777888899990000,'VISA',12,2028),
('P008',8888999900001111,'MC',6,2025),
('P009',9999000011112222,'VISA',4,2027),
('P010',1010101010101010,'MC',3,2026);
```

4)Queries:

```
/*1. Write a query to display the average monthly ticket cost for each flight in
ABC Airlines. The query should display the Flight_Id, From_location, To_Location,
Month Name as “Month_Name” and average price as “Average_Price”. Display the
records sorted in ascending*/

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 ASC,
    MONTH(fd.FLIGHT_DEPARTURE_DATE);
```

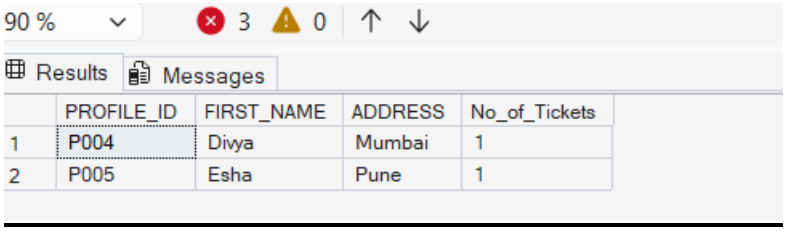
Results | Messages

	FLIGHT_ID	FROM_LOCATION	TO_LOCATION	Month_Name	Average_Price
1	F001	Chennai	Hyderabad	April	4500.000000
2	F001	Chennai	Hyderabad	May	4800.000000
3	F002	Delhi	Mumbai	April	5500.000000
4	F003	Bangalore	Chennai	June	4000.000000
5	F004	Hyderabad	Delhi	April	6000.000000
6	F007	Chennai	Hyderabad	May	4700.000000
7	F008	Mumbai	Delhi	June	5200.000000
8	F010	Chennai	Bangalore	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.*/

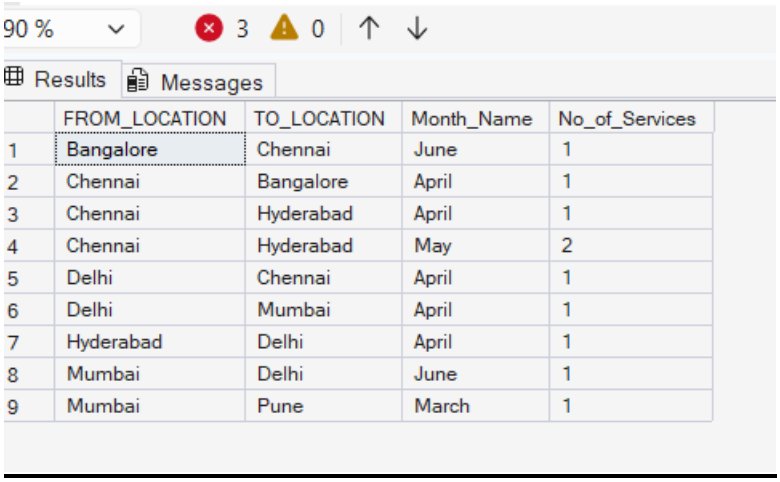
```
SELECT
p.PROFILE_ID,
p.FIRST_NAME,
p.ADDRESS,
COUNT(t.TICKET_ID) AS No_of_Tickets
FROM air_passenger_profile p
JOIN air_ticket_info t ON p.PROFILE_ID = t.PROFILE_ID
GROUP BY p.PROFILE_ID, p.FIRST_NAME, p.ADDRESS
HAVING COUNT(t.TICKET_ID) = (
SELECT MIN(ticket_count)
FROM (
SELECT COUNT(*) AS ticket_count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



	PROFILE_ID	FIRST_NAME	ADDRESS	No_of_Tickets
1	P004	Divya	Mumbai	1
2	P005	Esha	Pune	1

/*3. Write a query to display the number of flight services between locations in a month. The Query should display From_Location, To_Location, 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_Location and then by To_Locarion and then by month name.*/

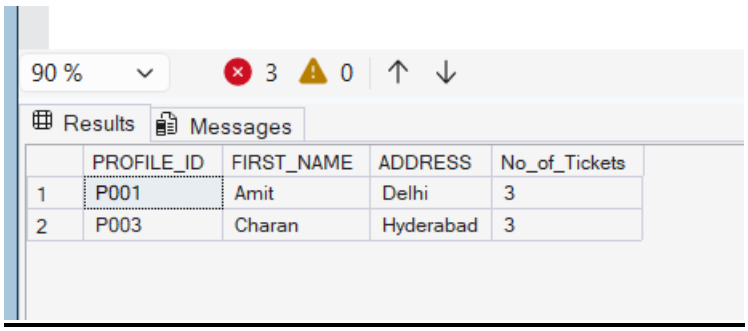
```
SELECT
f.FROM_LOCATION,
f.TO_LOCATION,
DATENAME(MONTH, fd.FLIGHT_DEPARTURE_DATE) AS Month_Name,
COUNT(fd.FLIGHT_DEPARTURE_DATE) AS No_of_Services
FROM air_flight f
JOIN air_flight_details fd ON f.FLIGHT_ID = fd.FLIGHT_ID
GROUP BY
f.FROM_LOCATION,
f.TO_LOCATION,
DATENAME(MONTH, fd.FLIGHT_DEPARTURE_DATE),
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	Chennai	June	1
2	Chennai	Bangalore	April	1
3	Chennai	Hyderabad	April	1
4	Chennai	Hyderabad	May	2
5	Delhi	Chennai	April	1
6	Delhi	Mumbai	April	1
7	Hyderabad	Delhi	April	1
8	Mumbai	Delhi	June	1
9	Mumbai	Pune	March	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.*/

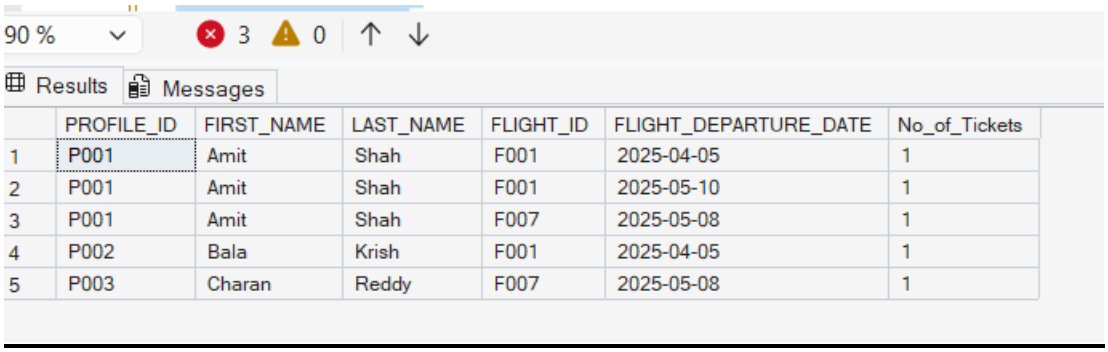
```
SELECT
p.PROFILE_ID,
p.FIRST_NAME,
p.ADDRESS,
COUNT(t.TICKET_ID) AS No_of_Tickets
FROM air_passenger_profile p
JOIN air_ticket_info t ON p.PROFILE_ID = t.PROFILE_ID
GROUP BY p.PROFILE_ID, p.FIRST_NAME, p.ADDRESS
HAVING COUNT(t.TICKET_ID) = (
SELECT MAX(ticket_count)
FROM (
SELECT COUNT(*) AS ticket_count
FROM air_ticket_info
GROUP BY PROFILE_ID
) x
)
ORDER BY p.FIRST_NAME ASC;
```



	PROFILE_ID	FIRST_NAME	ADDRESS	No_of_Tickets
1	P001	Amit	Delhi	3
2	P003	Charan	Hyderabad	3

```
/*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(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;
```



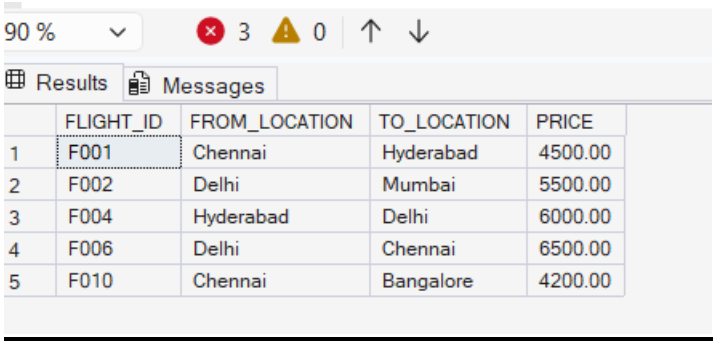
90 % 3 0

Results Messages

	PROFILE_ID	FIRST_NAME	LAST_NAME	FLIGHT_ID	FLIGHT_DEPARTURE_DATE	No_of_Tickets
1	P001	Amit	Shah	F001	2025-04-05	1
2	P001	Amit	Shah	F001	2025-05-10	1
3	P001	Amit	Shah	F007	2025-05-08	1
4	P002	Bala	Krish	F001	2025-04-05	1
5	P003	Charan	Reddy	F007	2025-05-08	1

```
/*6. Write a query to display flight id,from location, to location and ticket
price of flights whose departure is in the month of april.*/

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;
```



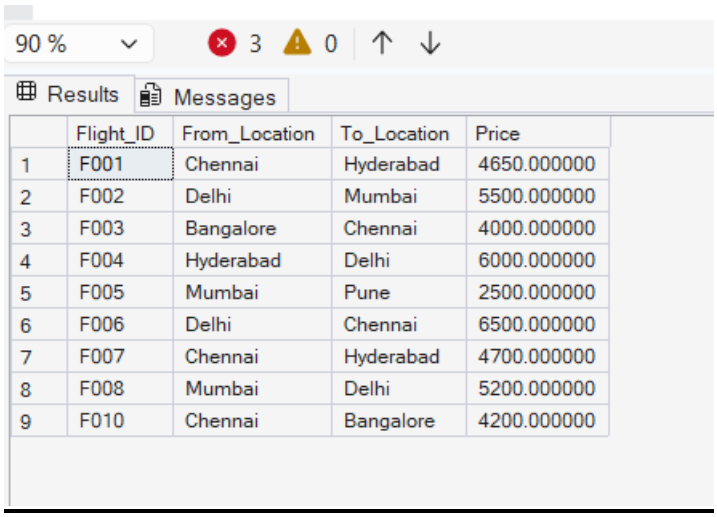
90 % 3 0

Results Messages

	FLIGHT_ID	FROM_LOCATION	TO_LOCATION	PRICE
1	F001	Chennai	Hyderabad	4500.00
2	F002	Delhi	Mumbai	5500.00
3	F004	Hyderabad	Delhi	6000.00
4	F006	Delhi	Chennai	6500.00
5	F010	Chennai	Bangalore	4200.00

/*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 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;
```



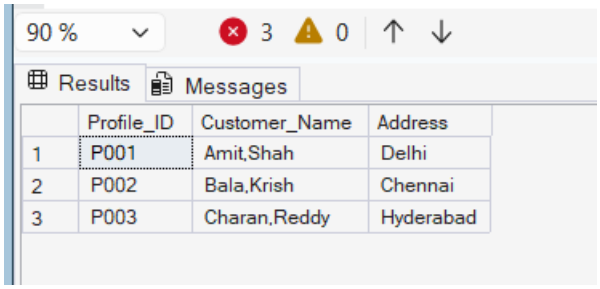
90 % 3 0

Results Messages

	Flight_ID	From_Location	To_Location	Price
1	F001	Chennai	Hyderabad	4650.000000
2	F002	Delhi	Mumbai	5500.000000
3	F003	Bangalore	Chennai	4000.000000
4	F004	Hyderabad	Delhi	6000.000000
5	F005	Mumbai	Pune	2500.000000
6	F006	Delhi	Chennai	6500.000000
7	F007	Chennai	Hyderabad	4700.000000
8	F008	Mumbai	Delhi	5200.000000
9	F010	Chennai	Bangalore	4200.000000

/*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. */

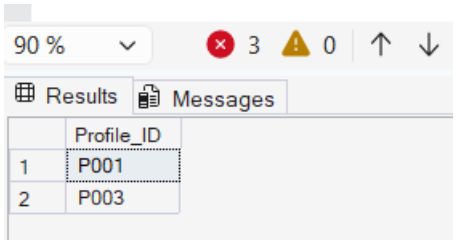
```
SELECT DISTINCT app.Profile_ID,CONCAT(app.First_Name,',',app.Last_Name) AS
Customer_Name,app.Address
FROM air_passenger_profile app
JOIN air_ticket_info ati
ON ati.Profile_ID=app.Profile_ID
JOIN air_flight af
ON af.Flight_ID=ati.Flight_ID
WHERE af.From_Location='Chennai' AND af.To_Location='Hyderabad'
ORDER BY app.Profile_ID;
```



	Profile_ID	Customer_Name	Address
1	P001	Amit,Shah	Delhi
2	P002	Bala,Krish	Chennai
3	P003	Charan,Reddy	Hyderabad

/*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.*/

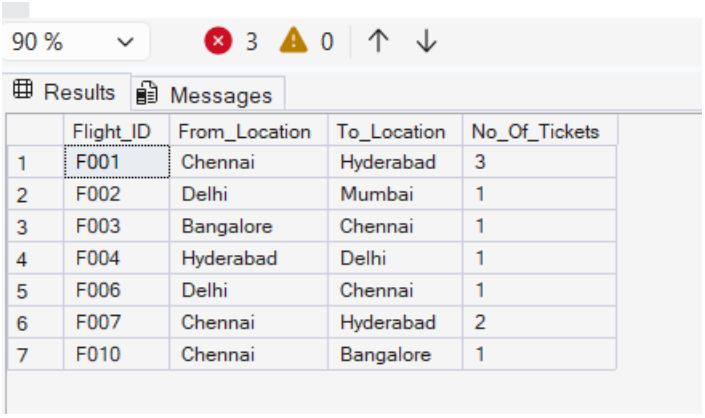
```
SELECT app.Profile_ID
FROM air_passenger_profile app
JOIN air_ticket_info ati
ON ati.Profile_ID=app.Profile_ID
GROUP BY app.Profile_ID,app.First_Name,app.Address
HAVING COUNT(ati.TICKET_ID)=(
 SELECT MAX(ticket_count)
 FROM(
 SELECT COUNT(*) AS ticket_count
 FROM air_ticket_info
 GROUP BY PROFILE_ID
 )x
)
ORDER BY app.Profile_ID;
```



	Profile_ID
1	P001
2	P003

/*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 atleast 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(ati.Ticket_ID) AS
No_Of_Tickets
FROM air_flight af
JOIN air_ticket_info ati
ON af.Flight_ID=ati.Flight_ID
GROUP BY af.Flight_ID,af.From_Location,af.To_Location
HAVING COUNT(ati.Ticket_ID)>=1
ORDER BY af.Flight_ID;
```



	Flight_ID	From_Location	To_Location	No_Of_Tickets
1	F001	Chennai	Hyderabad	3
2	F002	Delhi	Mumbai	1
3	F003	Bangalore	Chennai	1
4	F004	Hyderabad	Delhi	1
5	F006	Delhi	Chennai	1
6	F007	Chennai	Hyderabad	2
7	F010	Chennai	Bangalore	1