NAME : KARTHIK S
USN : 1BM19CS070
DATE : 23/06/21

DBMS LAB PROGRAM – 9

9. AIRLINES FLIGHT DATABASE

QUESTION :

CONSIDER THE FOLLOWING DATABASE THAT KEEPS TRACK OF AIRLINE FLIGHT INFORMATION:

FLIGHTS (FLNO: INTEGER, FROM: STRING, TO: STRING, DISTANCE: INTEGER, DEPARTS: TIME, ARRIVES: TIME, PRICE: INTEGER)

AIRCRAFT (AID: INTEGER, ANAME: STRING, CRUISINGRANGE: INTEGER)

CERTIFIED (EID: INTEGER, AID: INTEGER)

EMPLOYEE (EID: INTEGER, ENAME: STRING, SALARY: INTEGER)

NOTE THAT THE EMPLOYEES RELATION DESCRIBES PILOTS AND OTHER KINDS OF EMPLOYEES AS WELL; EVERY PILOT IS CERTIFIED

FOR SOME AIRCRAFT, AND ONLY PILOTS ARE CERTIFIED TO FLY.

WRITE EACH OF THE FOLLOWING QUERIES IN SQL.

I. FIND THE NAMES OF AIRCRAFT SUCH THAT ALL PILOTS CERTIFIED TO OPERATE THEM HAVE SALARIES MORE THAN RS.80,000.

II. FOR EACH PILOT WHO IS CERTIFIED FOR MORE THAN THREE AIRCRAFTS, FIND THE EID AND THE MAXIMUM CRUISING RANGE OF

THE AIRCRAFT FOR WHICH SHE OR HE IS CERTIFIED.

III. FIND THE NAMES OF PILOTS WHOSE SALARY IS LESS THAN THE PRICE OF THE CHEAPEST ROUTE FROM BENGALURU TO

FRANKFURT.

IV. FOR ALL AIRCRAFT WITH CRUISING RANGE OVER 1000 KMS, FIND THE NAME OF THE AIRCRAFT AND THE AVERAGE SALARY OF

ALL PILOTS CERTIFIED FOR THIS AIRCRAFT.

V. FIND THE NAMES OF PILOTS CERTIFIED FOR SOME BOEING AIRCRAFT.

VI. FIND THE AIDS OF ALL AIRCRAFT THAT CAN BE USED ON ROUTES FROM BENGALURU TO NEW DELHI.

VII. A CUSTOMER WANTS TO TRAVEL FROM MADISON TO NEW YORK WITH NO MORE THAN TWO CHANGES OF FLIGHT. LIST THE

CHOICE OF DEPARTURE TIMES FROM MADISON IF THE CUSTOMER WANTS TO ARRIVE IN NEW YORK BY 6 P.M.

VIII. PRINT THE NAME AND SALARY OF EVERY NON-PILOT WHOSE SALARY IS MORE THAN THE AVERAGE SALARY FOR PILOTS.

PROGRAM CODE :

```
CREATE DATABASE AIRLINES;
USE AIRLINES;
CREATE TABLE FLIGHTS(
 FLNO INT,
 `FROM` VARCHAR(20),
 `TO` VARCHAR(20),
 DISTANCE INT,
DEPARTS TIME,
 ARRIVES TIME,
PRICE INT,
 PRIMARY KEY(FLNO) );
 CREATE TABLE AIRCRAFT(
 AID INT,
 ANAME VARCHAR(20),
 CRUISINGRANGE INT,
  PRIMARY KEY (AID) );

CREATE TABLE EMPLOYEES(
 EID INT,
 ENAME VARCHAR(20),
 SALARY INT,
 PRIMARY KEY (EID) );

CREATE TABLE CERTIFIED(
  EID INT,
  AID INT,
  PRIMARY KEY (EID,AID),
 FOREIGN KEY (EID) REFERENCES EMPLOYEES (EID),
FOREIGN KEY (AID) REFERENCES AIRCRAFT (AID) );

INSERT INTO FLIGHTS (FLNO,`FROM`,`TO`,DISTANCE,DEPARTS,ARRIVES,PRICE) VALUES
 (1,'BANGALORE','CHENNAI',360,'08:45','10:00',10000),
 (2,'BANGALORE','DELHI',1700,'12:15','15:00',37000),
 (3,'BANGALORE','KOLKATA',1500,'15:15','05:25',30000),
 (4,'MUMBAI','DELHI',1200,'10:30','12:30',28000),
(5,'BANGALORE','NEW YORK',14000,'05:45','02:30',90000),
(6,'DELHI','CHICAGO',12000,'10:00','05:45',95000),
(7,'BANGALORE','FRANKFURT',15000,'12:00','06:30',98000),
 (8,'MADISON','NEW YORK',1500,'10:15','14:25',30000);
```

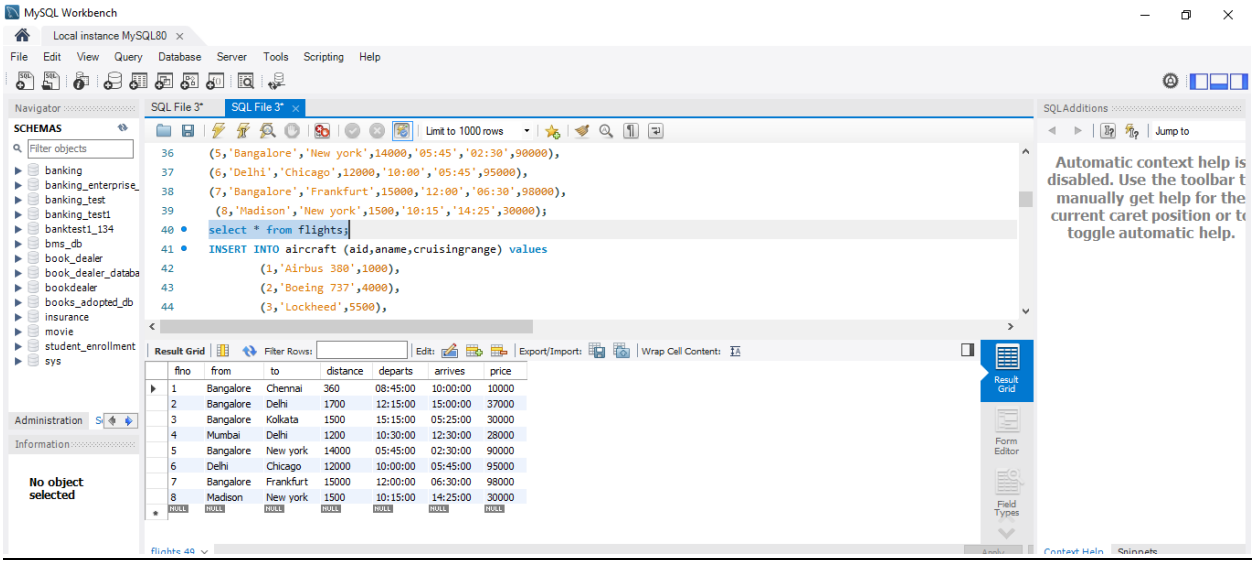
```
INSERT INTO AIRCRAFT (AID,ANAME,CRUISINGRANGE) VALUES
      (1,'AIRBUS 380',1000),
      (2,'BOEING 737',4000),
      (3,'LOCKHEED',5500),
      (4,'AIRBUS A220',9500),
      (5,'BOEING 747',800),
      (6,'DOUGLAS DC3',900);

INSERT INTO EMPLOYEES (EID,ENAME,SALARY) VALUES
(1,'ZOYA',95000),
(2,'AKSHAY',65000),
(3,'NIVEDITHA',70000),
(4,'SAFAN',45000),
(5,'PETER',95000),
 (6,'NAYAN',100000),
(7,'AJAY',50000);

INSERT INTO CERTIFIED (EID,AID) VALUES
(1,1),
(1,3),
(1,4),
(5,4),
(5,3),
(1,2),
 (2,6),
(2,5),
(4,5),
 (6,4),
 (6,3),
 (3,6),
 (3,2);

/* I. FOR EACH PILOT WHO IS CERTIFIED FOR MORE THAN THREE AIRCRAFTS, FIND THE EID AND THE
MAXIMUM CRUISING RANGE OF
THE AIRCRAFT FOR WHICH SHE OR HE IS CERTIFIED*/
SELECT DISTINCT A.ANAME
FROM AIRCRAFT A
WHERE A.AID IN (SELECT C.AID
FROM CERTIFIED C, EMPLOYEES E
WHERE C.EID = E.EID AND
NOT EXISTS ( SELECT *
FROM EMPLOYEES E1
WHERE E1.EID = E.EID AND E1.SALARY < 80000 )) ;

/* II. FIND THE NAMES OF PILOTS WHOSE SALARY IS LESS THAN THE PRICE OF THE CHEAPEST ROUTE
FROM BENGALURU TO
FRANKFURT.*/
SELECT C.EID, MAX(A.CRUISINGRANGE)
```

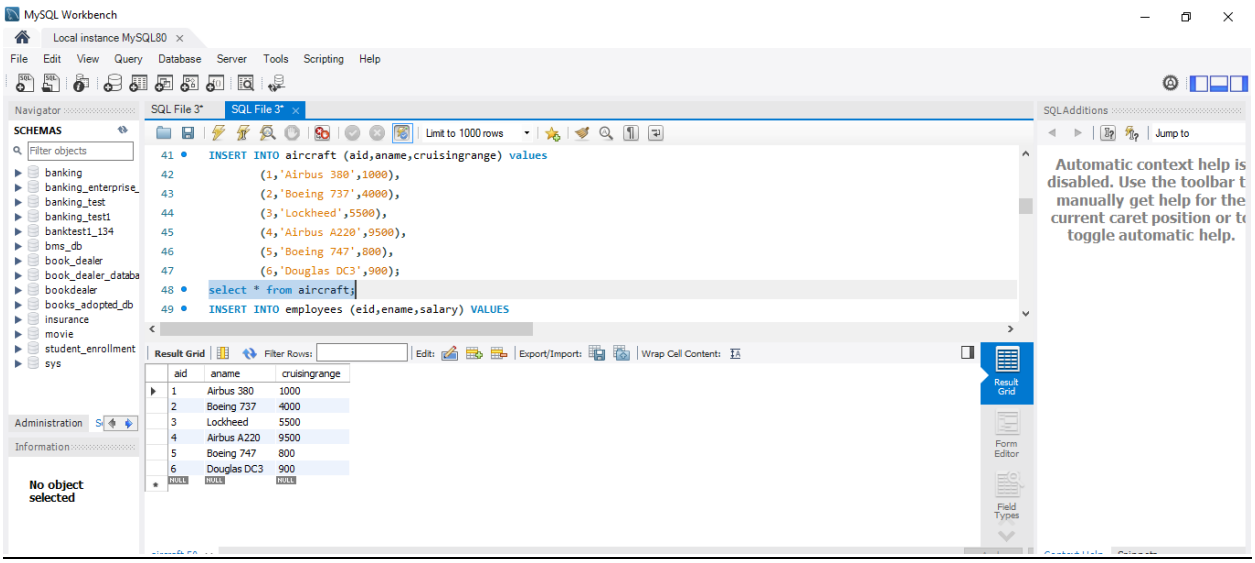
```
FROM CERTIFIED C, AIRCRAFT A
WHERE C.AID = A.AID
GROUP BY C.EID
HAVING COUNT(*) > 3;


/* III. FOR ALL AIRCRAFT WITH CRUISING RANGE OVER 1000 KMS, FIND THE NAME OF THE AIRCRAFT
AND THE AVERAGE SALARY OF
ALL PILOTS CERTIFIED FOR THIS AIRCRAFT.*/
SELECT DISTINCT E.ENAME
    FROM EMPLOYEES E
   WHERE E.SALARY<
   (SELECT MIN(F.PRICE)
   FROM FLIGHTS F
   WHERE F.FROM='BANGALORE'
   AND F.TO='FRANKFURT');


/* IV. FIND THE NAMES OF PILOTS CERTIFIED FOR SOME BOEING AIRCRAFT.*/
SELECT A.AID,A.ANAME,AVG(E.SALARY)
    FROM AIRCRAFT A,CERTIFIED C,EMPLOYEES E
   WHERE A.AID=C.AID
   AND C.EID=E.EID
   AND A.CRUISINGRANGE>1000
   GROUP BY A.AID,A.ANAME;

/* V. FIND THE AIDS OF ALL AIRCRAFT THAT CAN BE USED ON ROUTES FROM BENGALURU TO NEW
DELHI.*/
SELECT DISTINCT E.ENAME
    FROM EMPLOYEES E,AIRCRAFT A,CERTIFIED C
   WHERE E.EID=C.EID
   AND C.AID=A.AID
  AND A.ANAME LIKE 'BOEING%';

/*VI. A CUSTOMER WANTS TO TRAVEL FROM MADISON TO NEW YORK WITH NO MORE THAN TWO
CHANGES OF FLIGHT. LIST THE
CHOICE OF DEPARTURE TIMES FROM MADISON IF THE CUSTOMER WANTS TO ARRIVE IN NEW YORK BY
6 P.M.
*/
 SELECT A.AID
    FROM AIRCRAFT A
    WHERE A.CRUISINGRANGE>
    (SELECT MIN(F.DISTANCE)
   FROM FLIGHTS F
   WHERE F.FROM='BANGALORE'
   AND F.TO='DELHI');

/* VII. A CUSTOMER WANTS TO TRAVEL FROM MADISON TO NEW YORK WITH NO MORE THAN TWO
```

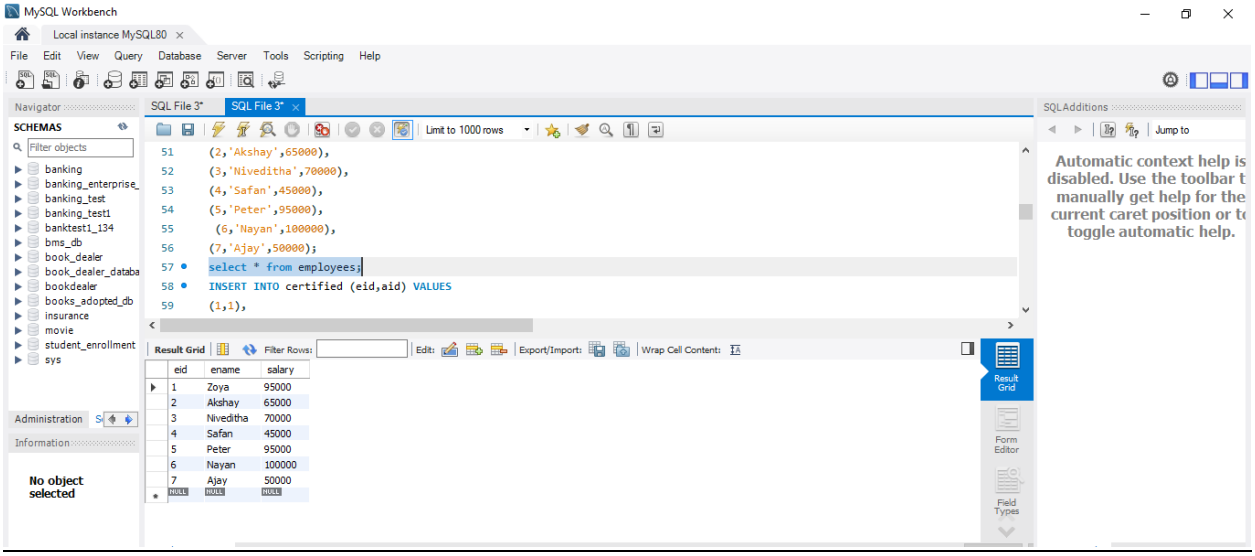
```
CHANGES OF FLIGHT. LIST THE
CHOICE OF DEPARTURE TIMES FROM MADISON IF THE CUSTOMER WANTS TO ARRIVE IN NEW YORK BY
6 P.M.*/
SELECT F.DEPARTS
FROM FLIGHTS F WHERE F.FLNO IN (  SELECT F0.FLNO
FROM FLIGHTS F0
WHERE F0.FROM = 'MADISON' AND F0.TO = 'NEW YORK' AND F0.ARRIVES < '18:00' );

/* VIII. PRINT THE NAME AND SALARY OF EVERY NON-PILOT WHOSE SALARY IS MORE THAN THE
AVERAGE SALARY FOR PILOTS.
*/
SELECT E.ENAME, E.SALARY
FROM EMPLOYEES E
WHERE E.EID NOT IN ( SELECT DISTINCT C.EID
FROM CERTIFIED C )
AND E.SALARY > ( SELECT AVG (E1.SALARY)
FROM EMPLOYEES E1
WHERE E1.EID IN
( SELECT DISTINCT C1.EID
FROM CERTIFIED C1 ) );
```

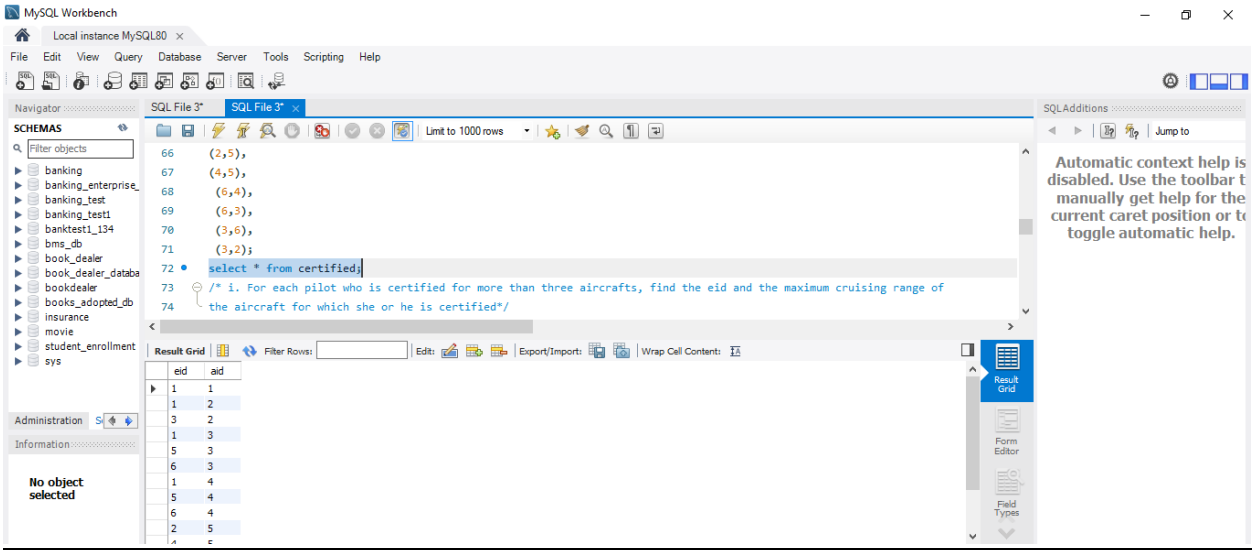
SCREENSHOTS OF THE PROGRAM OUTPUT :

➔ CREATION AND INSERTION OF VALUES

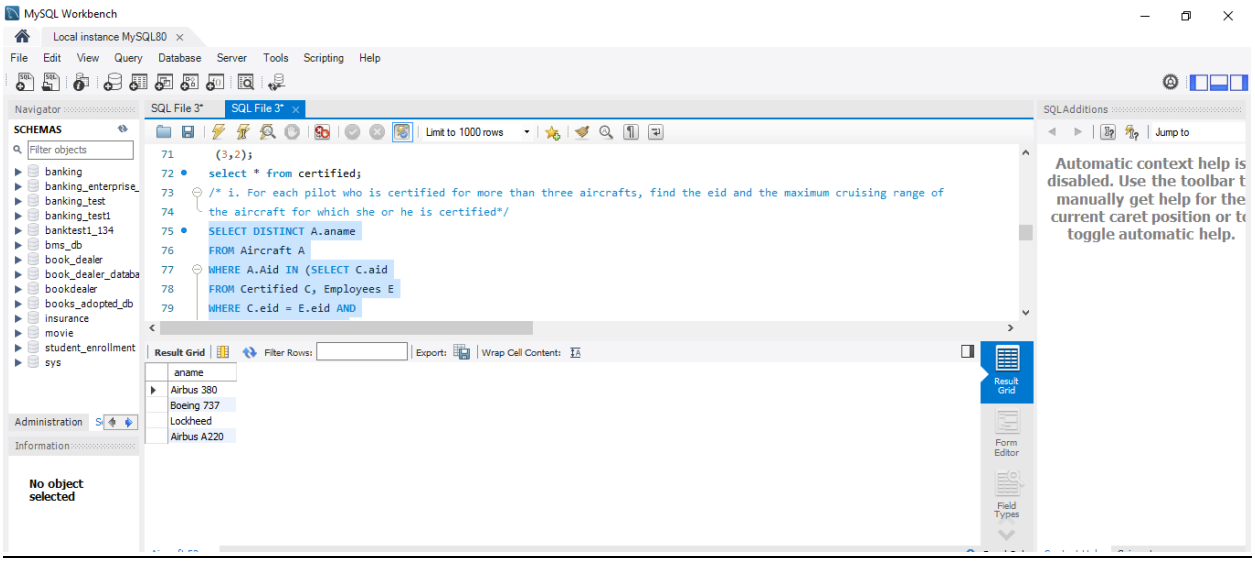



MySQL Workbench
Local instance MySQL80
File Edit View Query Database Server Tools Scripting Help
SCHEMAS
41 INSERT INTO aircraft (aid,aname,cruisingrange) values
42 (1,'Airbus 380',1000),
43 (2,'Boeing 737',4000),
44 (3,'Lockheed',5500),
45 (4,'Airbus A220',9500),
46 (5,'Boeing 747',800),
47 (6,'Douglas DC3',900);
48 select * from aircraft;
49 INSERT INTO employees (eid,ename,salary) VALUES
aid aname cruisingrange
1 Airbus 380 1000
2 Boeing 737 4000
3 Lockheed 5500
4 Airbus A220 9500
5 Boeing 747 800
6 Douglas DC3 900
No object selected

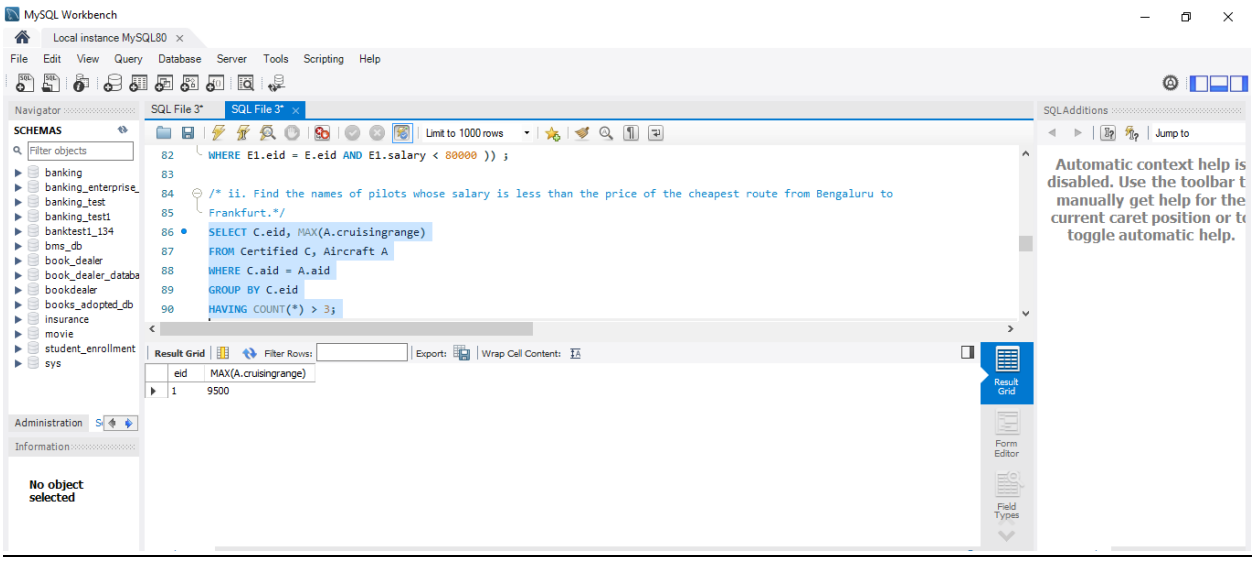

MySQL Workbench
Local instance MySQL80
File Edit View Query Database Server Tools Scripting Help
SCHEMAS
51 (2,'Akshay',65000),
52 (3,'Niveditha',70000),
53 (4,'Safan',45000),
54 (5,'Peter',95000),
55 (6,'Nayan',100000),
56 (7,'Ajay',50000);
57 select * from employees;
58 INSERT INTO certified (eid,aid) VALUES
59 (1,1),
eid ename salary
1 Zoya 95000
2 Akshay 65000
3 Niveditha 70000
4 Safan 45000
5 Peter 95000
6 Nayan 100000
7 Ajay 50000
No object selected


MySQL Workbench
Local instance MySQL80
File Edit View Query Database Server Tools Scripting Help
SCHEMAS
66 (2,5),
67 (4,5),
68 (6,4),
69 (6,3),
70 (3,6),
71 (3,2);
72 select * from certified;
73 /* i. For each pilot who is certified for more than three aircrafts, find the eid and the maximum cruising range of
74 the aircraft for which she or he is certified*/
eid aid
1 1
1 2
3 2
1 3
5 3
6 3
1 4
5 4
6 4
2 5
No object selected

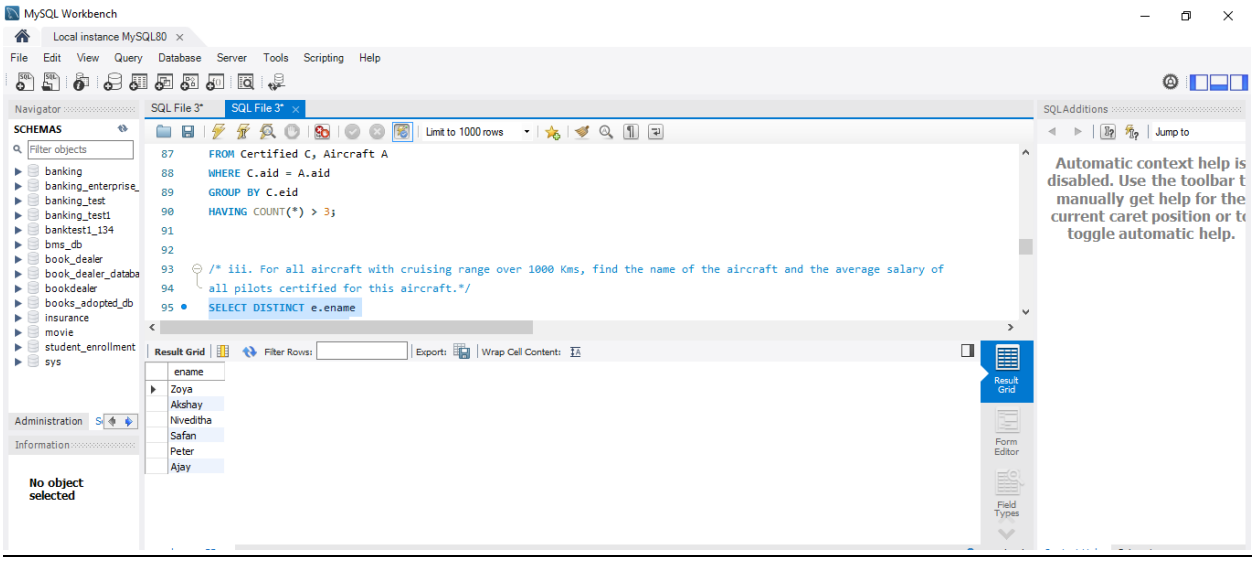
QUERY 1 = FIND THE NAMES OF AIRCRAFT SUCH THAT ALL PILOTS CERTIFIED TO OPERATE THEM HAVE SALARIES MORE THAN RS.80,000



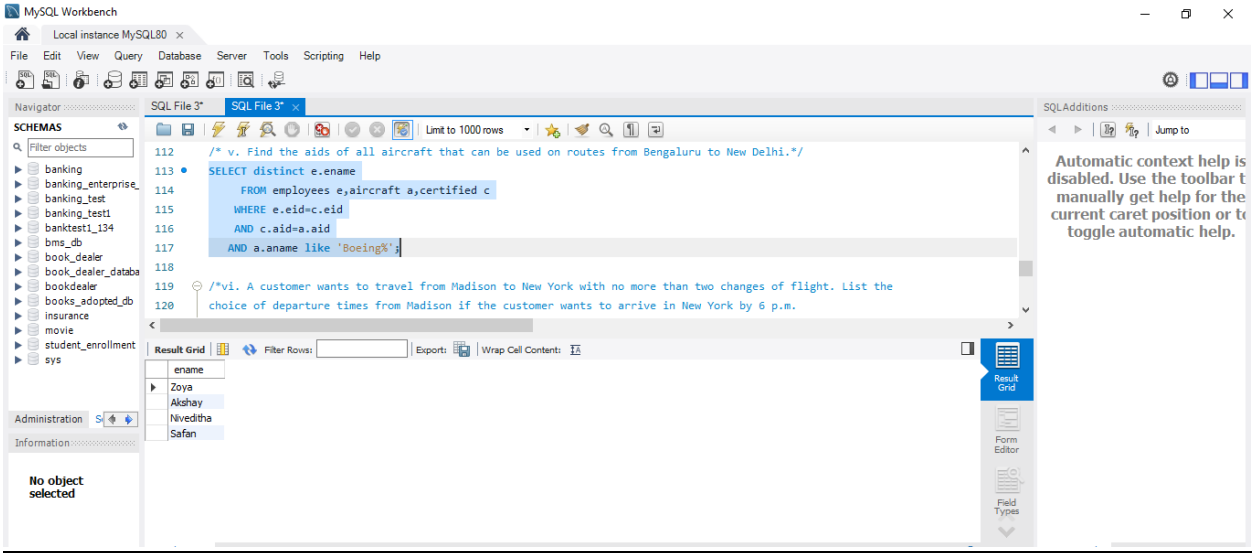
QUERY 2 = FOR EACH PILOT WHO IS CERTIFIED FOR MORE THAN THREE AIRCRAFTS, FIND THE EID AND THE MAXIMUM CRUISING RANGE OF THE AIRCRAFT FOR WHICH SHE OR HE IS CERTIFIED.



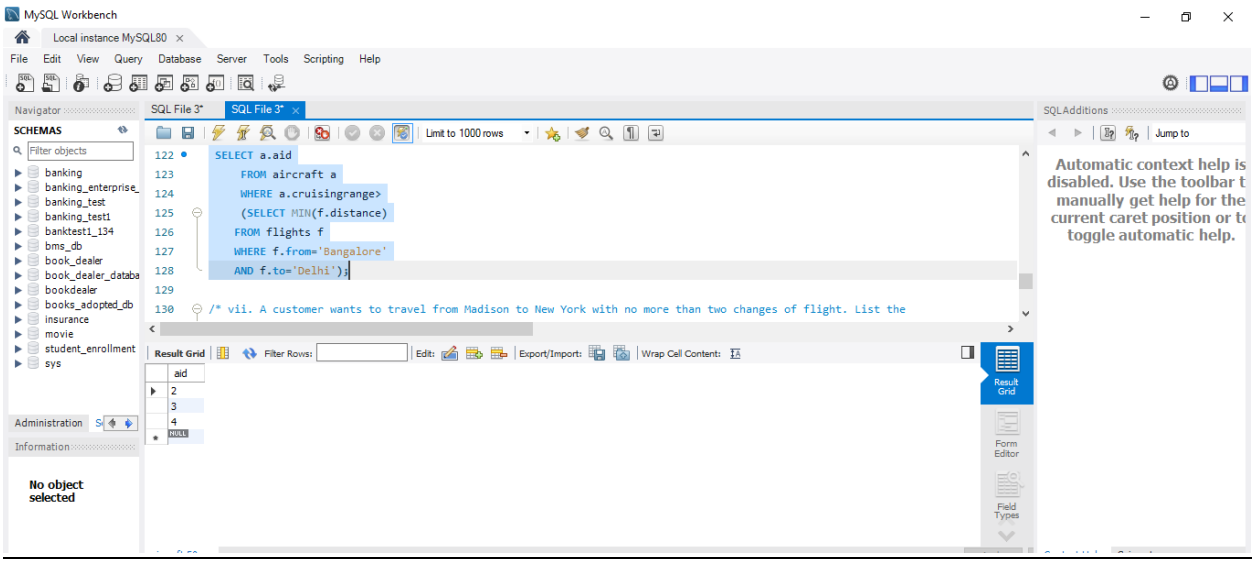
QUERY 3 = FIND THE NAMES OF PILOTS WHOSE SALARY IS LESS THAN THE PRICE OF THE CHEAPEST ROUTE FROM BENGALURU TO FRANKFURT.



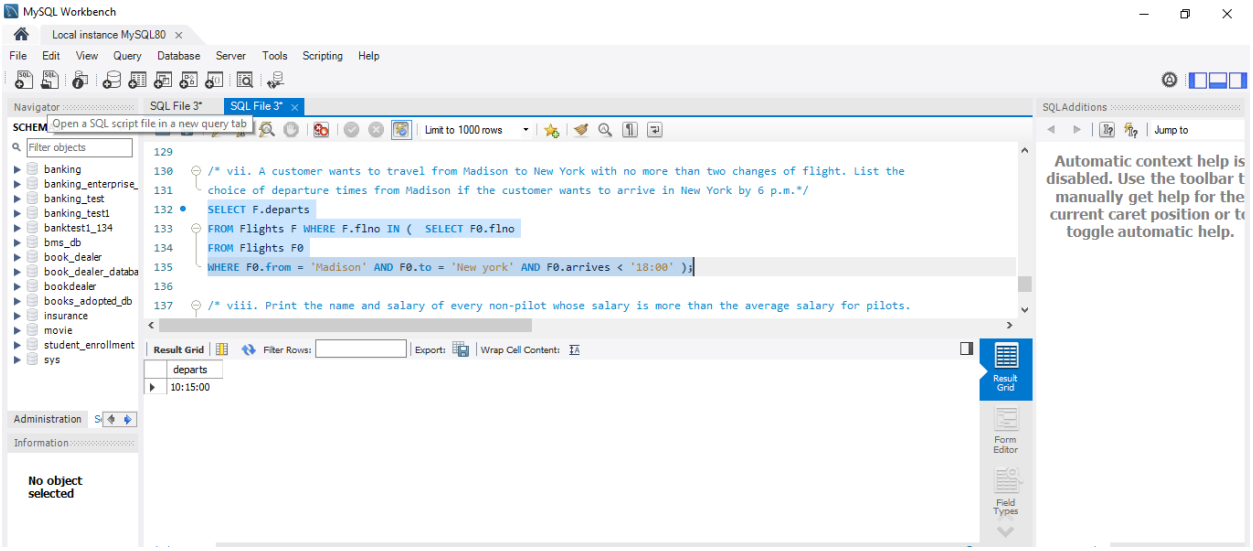
QUERY 4 = FOR ALL AIRCRAFT WITH CRUISING RANGE OVER 1000 KMS, FIND THE NAME OF THE AIRCRAFT AND THE AVERAGE SALARY OF ALL PILOTS CERTIFIED FOR THIS AIRCRAFT



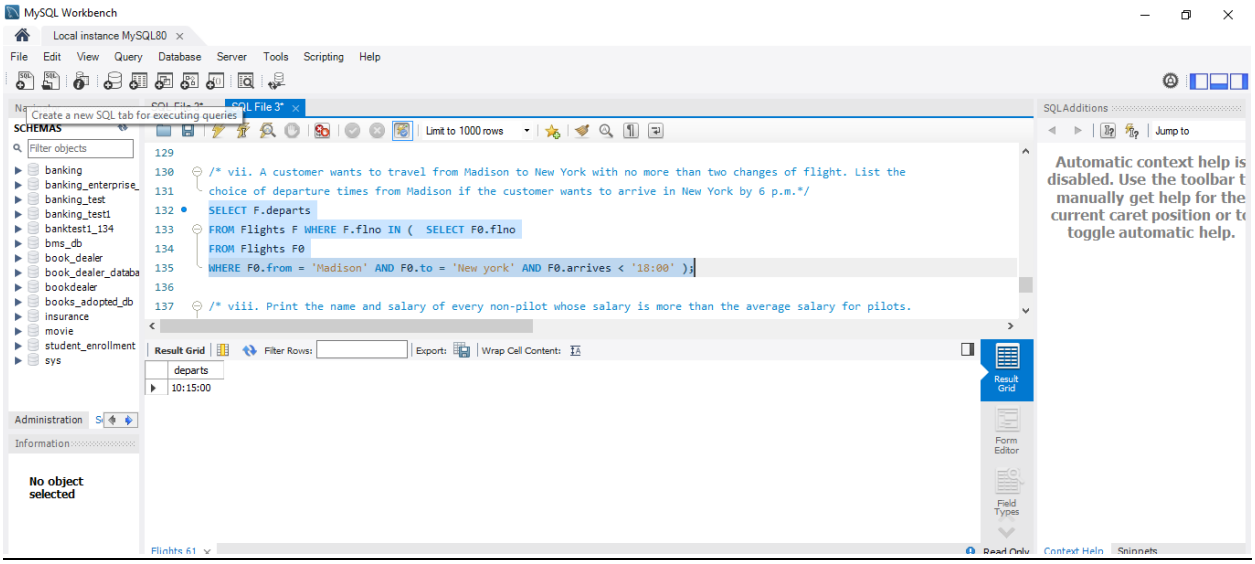
QUERY 5 = FIND THE NAMES OF PILOTS CERTIFIED FOR SOME BOEING AIRCRAFT.



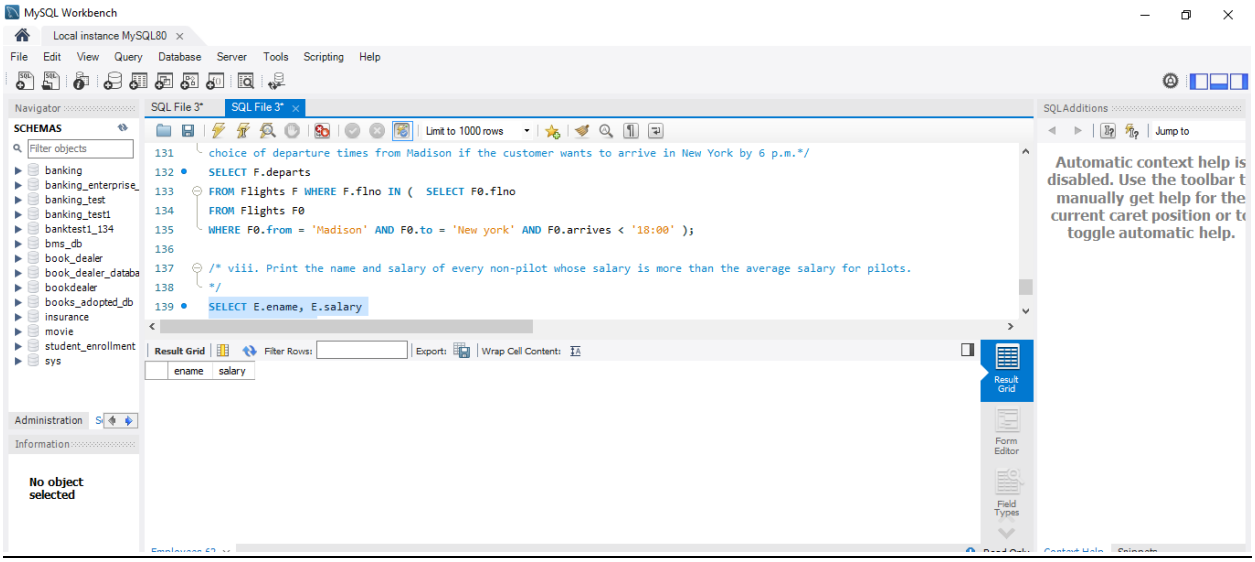
QUERY 6 = FIND THE AIDS OF ALL AIRCRAFT THAT CAN BE USED ON ROUTES FROM BENGALURU TO NEW DELHI.



QUERY 7 = A CUSTOMER WANTS TO TRAVEL FROM MADISON TO NEW YORK WITH NO MORE THAN TWO CHANGES OF FLIGHT. LIST THE CHOICE OF DEPARTURE TIMES FROM MADISON IF THE CUSTOMER WANTS TO ARRIVE IN NEW YORK BY 6 P.M.



QUERY 8 = PRINT THE NAME AND SALARY OF EVERY NON-PILOT WHOSE SALARY IS MORE THAN THE AVERAGE SALARY FOR PILOTS.



** END OF WEEK 9 PROGRAM **