

PROGRAM 5: AIRLINE FLIGHT DATABASE

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)

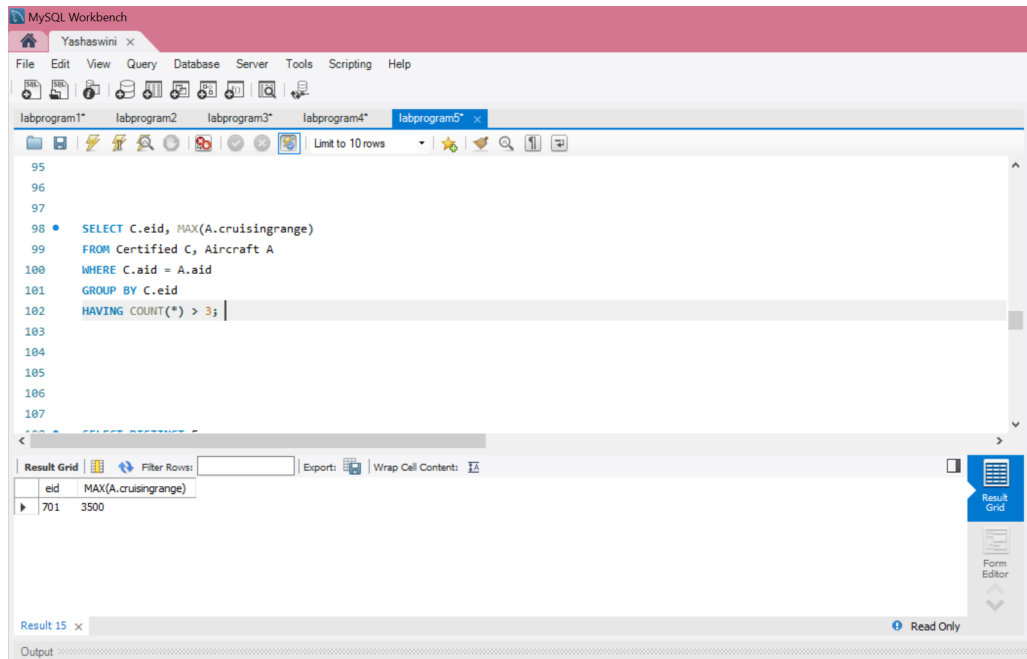
CERTIFIED(eid: integer, aid: integer)

EMPLOYEES(eid: integer, ename: string, salary: integer)

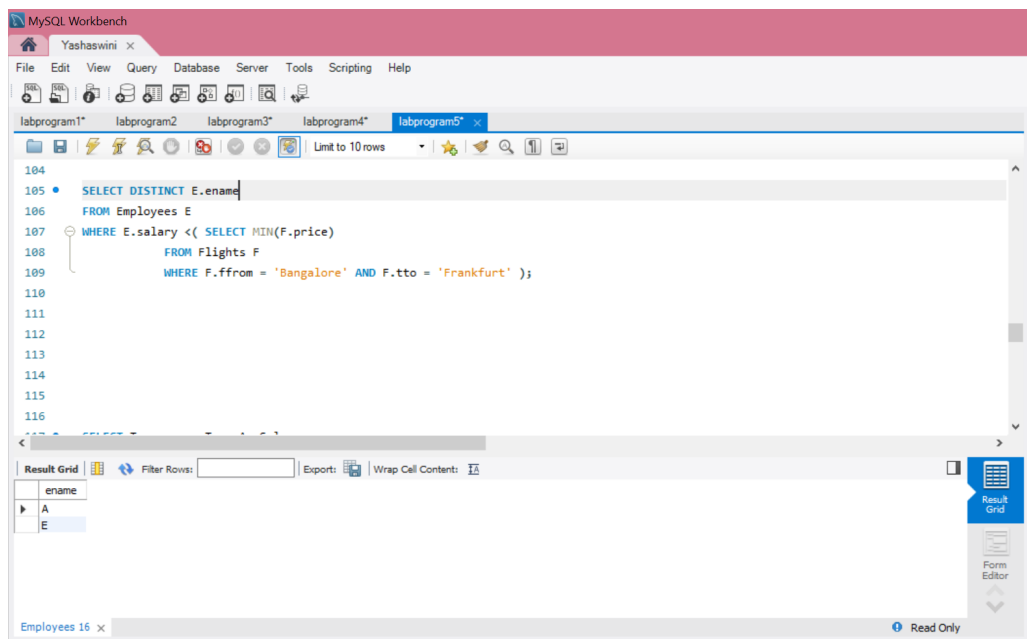
Note that the Employees relation describes pilots and other kinds of employees as well; Every pilot is certified for some aircraft, and only pilots are certified to fly.

Write each of the following queries in SQL.

- i. Find the names of aircraft for each pilot who is certified for more than three aircraft, find the eid and the maximum cruisingrange of the aircraft for which she or he is certified.



- ii. Find the names of pilots whose salary is less than the price of the cheapest route from Bengaluru to Frankfurt.



- iii. For all aircraft with cruisingrange over 1000 Kms, find the name of the aircraft and the average salary of all pilots certified for this aircraft.

The screenshot shows the MySQL Workbench interface with a query editor and a result grid. The query is as follows:

```
SELECT Temp.name, Temp.AvgSalary
FROM ( SELECT A.aid, A.aname AS name, AVG (E.salary) AS AvgSalary
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 ) Temp;
```

The result grid displays the following data:

name	AvgSalary
747	75000.0000
Dreamliner	113333.3333
Boeing	96666.6667
707	50000.0000
Dream	113333.3333

- iv. Find the names of pilots certified for some Boeing aircraft.

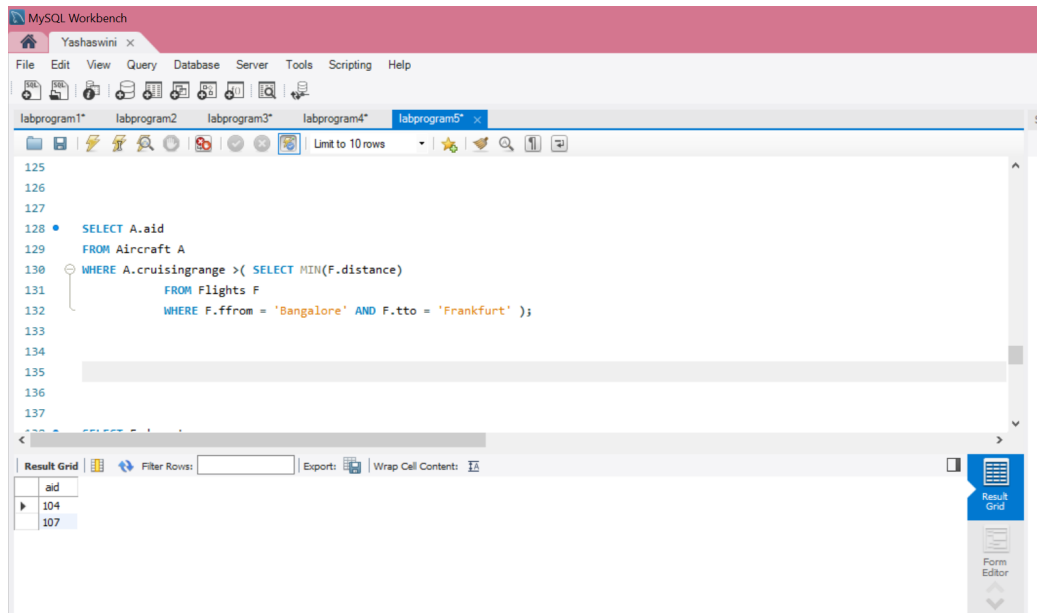
The screenshot shows the MySQL Workbench interface with a query editor and a result grid. The query is as follows:

```
SELECT DISTINCT E.ename
FROM Employees E, Certified C, Aircraft A
WHERE E.eid = C.eid AND C.aid = A.aid AND A.aname LIKE 'Boeing%';
```

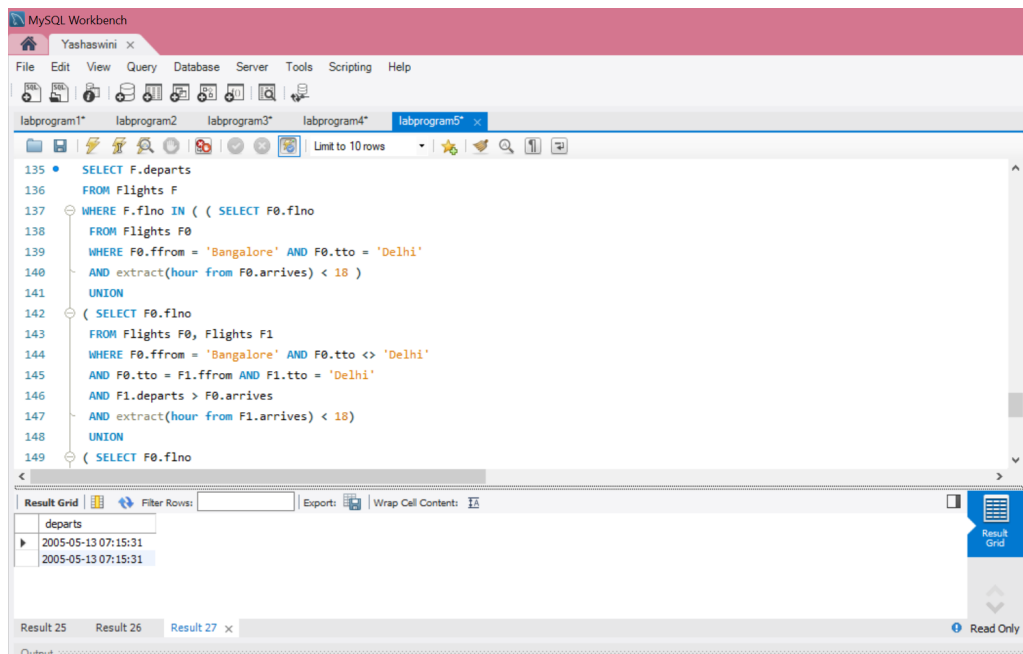
The result grid displays the following data:

ename
A
C
D

- v. Find the aids of all aircraft that can be used on routes from Bengaluru to New Delhi.



- 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.



Print the name and salary of every non-pilot whose salary is more than the average salary for pilots.

The screenshot shows the MySQL Workbench interface. The query editor contains the following SQL query:

```
160
161
162
163 • SELECT E.ename, E.salary
164 FROM Employees E
165 WHERE E.eid NOT IN ( SELECT DISTINCT C.eid
166 FROM Certified C )
167 AND E.salary > ( SELECT AVG (E1.salary)
168 FROM Employees E1
169 WHERE E1.eid IN
170 ( SELECT DISTINCT C1.eid
171 FROM Certified C1 ) );
172
173
174
```

The result grid at the bottom shows the following data:

ename	salary
G	90000

The interface also shows a toolbar with various icons, a menu bar with File, Edit, View, Query, Database, Server, Tools, Scripting, and Help, and a status bar at the bottom indicating 'Employees 30' and 'Read Only'.