Lab 5

Consider the following database that keeps track of airline flight information:
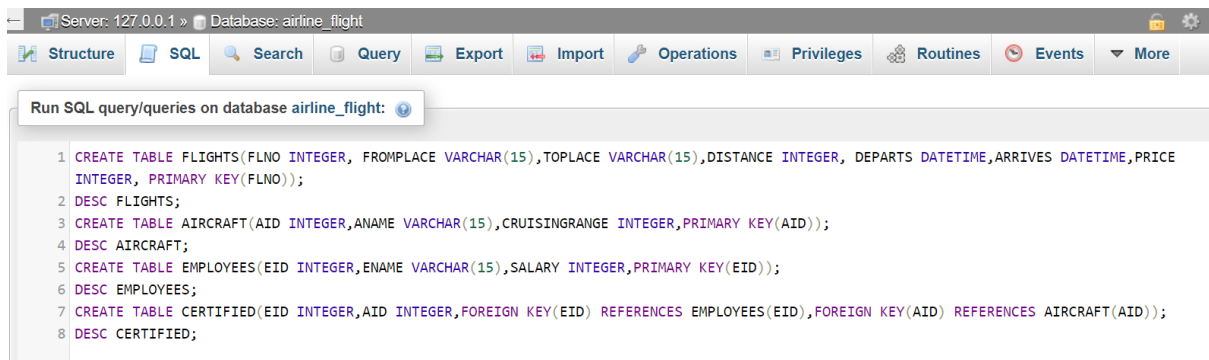
FLIGHTS (flno: integer, from: string, to: string, distance: integer, departs: time, arrives: time, price: integer)

AIRCRAFT (aid: integer, aname: string, cruisingrange: integer)

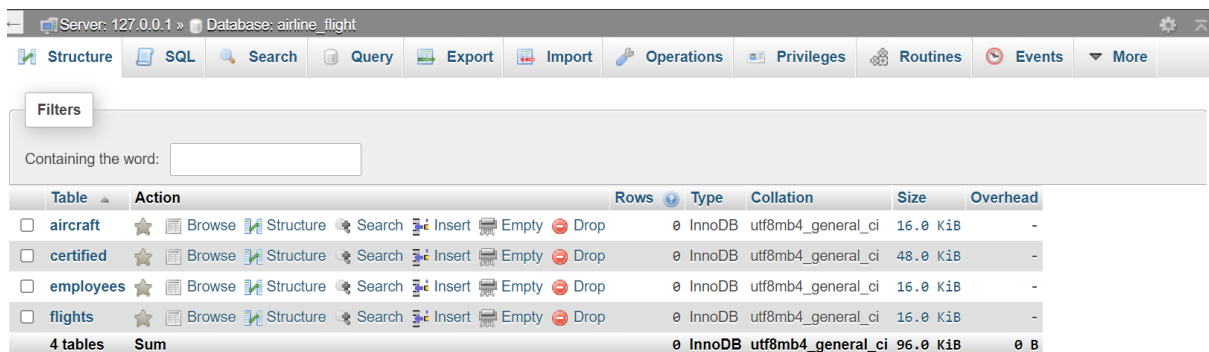CERTIFIED (eid: integer, aid: integer)

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.

Server: 127.0.0.1 » Database: airline_flight

| Structure | SQL | Search | Query | Export | Import | Operations | Privileges | Routines | Events | More |

Run SQL query/queries on database airline_flight:

```
1  CREATE TABLE FLIGHTS(FLNO INTEGER, FROMPLACE VARCHAR(15),TOPLACE VARCHAR(15),DISTANCE INTEGER, DEPARTS DATETIME,ARRIVES DATETIME,PRICE
   INTEGER, PRIMARY KEY(FLNO));
2  DESC FLIGHTS;
3  CREATE TABLE AIRCRAFT(AID INTEGER,ANAME VARCHAR(15),CRUISINGRANGE INTEGER,PRIMARY KEY(AID));
4  DESC AIRCRAFT;
5  CREATE TABLE EMPLOYEES(EID INTEGER,ENAME VARCHAR(15),SALARY INTEGER,PRIMARY KEY(EID));
6  DESC EMPLOYEES;
7  CREATE TABLE CERTIFIED(EID INTEGER,AID INTEGER,FOREIGN KEY(EID) REFERENCES EMPLOYEES(EID),FOREIGN KEY(AID) REFERENCES AIRCRAFT(AID));
8  DESC CERTIFIED;
```

Server: 127.0.0.1 » Database: airline_flight

| Structure | SQL | Search | Query | Export | Import | Operations | Privileges | Routines | Events | More |

Filters

Containing the word:

Table ▲	Action							Rows ⓘ	Type	Collation	Size	Overhead
☐ aircraft ⭐		📄 Browse	🔧 Structure	🔍 Search	➕ Insert	🗑 Empty	⊘ Drop	0	InnoDB	utf8mb4_general_ci	16.0 KiB	-
☐ certified ⭐		📄 Browse	🔧 Structure	🔍 Search	➕ Insert	🗑 Empty	⊘ Drop	0	InnoDB	utf8mb4_general_ci	48.0 KiB	-
☐ employees ⭐		📄 Browse	🔧 Structure	🔍 Search	➕ Insert	🗑 Empty	⊘ Drop	0	InnoDB	utf8mb4_general_ci	16.0 KiB	-
☐ flights ⭐		📄 Browse	🔧 Structure	🔍 Search	➕ Insert	🗑 Empty	⊘ Drop	0	InnoDB	utf8mb4_general_ci	16.0 KiB	-
4 tables	**Sum**							**0**	**InnoDB**	**utf8mb4_general_ci**	**96.0 KiB**	**0 B**

'FLIGHTS' TABLE:

✔ 1 row inserted. (Query took 0.2621 seconds.)

INSERT INTO FLIGHTS VALUES(101,'Bangalore','Kolkata',2500,'2021-01-03 08:20:31','2021-01-03 9:20:31',5000)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.0825 seconds.)

INSERT INTO FLIGHTS VALUES(102,'Delhi','Bangalore',4000,'2021-01-03 16:10:15','2021-01-03 19:30:10',8000)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.0680 seconds.)

INSERT INTO FLIGHTS VALUES(103,'Kolkata','Pune',1500,'2021-01-03 07:15:31','2021-01-03 7:20:31',3000)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.0625 seconds.)

INSERT INTO FLIGHTS VALUES(104,'New York','Bangalore',25000,'2021-01-03 08:20:31','2021-01-04 9:20:31',50000)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.2270 seconds.)

INSERT INTO FLIGHTS VALUES(105,'Bangalore','Chennai',1000,'2021-01-03 08:20:31','2021-01-03 9:20:31',2000)

[Edit inline] [Edit] [Create PHP code]

✔ Showing rows 0 - 4 (5 total, Query took 0.0049 seconds.)

SELECT * FROM FLIGHTS

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows: 25 ⌄ Filter rows: Search this table Sort by key: None ⌄

+ Options

	FLNO	FROMPLACE	TOPLACE	DISTANCE	DEPARTS	ARRIVES	PRICE
☐ 🖉 Edit �ᴇ Copy ⊝ Delete	101	Bangalore	Kolkata	2500	2021-01-03 08:20:31	2021-01-03 09:20:31	5000
☐ 🖉 Edit ᴘᴜᴛ Copy ⊝ Delete	102	Delhi	Bangalore	4000	2021-01-03 16:10:15	2021-01-03 19:30:10	8000
☐ 🖉 Edit ᴘᴜᴛ Copy ⊝ Delete	103	Kolkata	Pune	1500	2021-01-03 07:15:31	2021-01-03 07:20:31	3000
☐ 🖉 Edit ᴘᴜᴛ Copy ⊝ Delete	104	New York	Bangalore	25000	2021-01-03 08:20:31	2021-01-04 09:20:31	50000
☐ 🖉 Edit ᴘᴜᴛ Copy ⊝ Delete	105	Bangalore	Chennai	1000	2021-01-03 08:20:31	2021-01-03 09:20:31	2000

'AIRCRAFT' TABLE:

✔ 1 row inserted. (Query took 0.1205 seconds.)

INSERT INTO AIRCRAFT VALUES(101,'747',3000)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.0461 seconds.)

INSERT INTO AIRCRAFT VALUES(102,'Dreamliner',1500)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.0837 seconds.)

INSERT INTO AIRCRAFT VALUES(103,'747',500)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.0329 seconds.)

INSERT INTO AIRCRAFT VALUES(104,'Boeing',10000)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.0732 seconds.)

INSERT INTO AIRCRAFT VALUES(105,'Dreamliner',4000)

[Edit inline] [Edit] [Create PHP code]

✔ Showing rows 0 - 4 (5 total, Query took 0.0024 seconds.)

SELECT * FROM AIRCRAFT

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows: 25 ⌄   Filter rows: Search this table   Sort by key: None ⌄

+ Options

			AID	ANAME	CRUISINGRANGE
☐	Edit	Copy	Delete	101	747	3000
☐	Edit	Copy	Delete	102	Dreamliner	1500
☐	Edit	Copy	Delete	103	747	500
☐	Edit	Copy	Delete	104	Boeing	10000
☐	Edit	Copy	Delete	105	Dreamliner	4000

'EMPLOYEES' TABLE:

✔ 1 row inserted. (Query took 0.0828 seconds.)

INSERT INTO EMPLOYEES VALUES(601,'A',60000)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.0631 seconds.)

INSERT INTO EMPLOYEES VALUES(602,'B',80000)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.1114 seconds.)

INSERT INTO EMPLOYEES VALUES(603,'C',160000)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.0367 seconds.)

INSERT INTO EMPLOYEES VALUES(604,'D',120000)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.0338 seconds.)

INSERT INTO EMPLOYEES VALUES(605,'E',40000)

[Edit inline] [Edit] [Create PHP code]

✔ Showing rows 0 - 4 (5 total, Query took 0.0031 seconds.)

SELECT * FROM EMPLOYEES

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows: 25 ▾   Filter rows: Search this table   Sort by key: None ▾

+ Options

				EID	ENAME	SALARY
☐	🖉 Edit	ᴣⱶ Copy	⊖ Delete	601	A	60000
☐	🖉 Edit	ᴣⱶ Copy	⊖ Delete	602	B	80000
☐	🖉 Edit	ᴣⱶ Copy	⊖ Delete	603	C	160000
☐	🖉 Edit	ᴣⱶ Copy	⊖ Delete	604	D	120000
☐	🖉 Edit	ᴣⱶ Copy	⊖ Delete	605	E	40000

'CERTIFIED' TABLE:

✔ 1 row inserted. (Query took 0.0596 seconds.)

INSERT INTO CERTIFIED VALUES(601,101)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.0795 seconds.)

INSERT INTO CERTIFIED VALUES(601,102)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.1563 seconds.)

INSERT INTO CERTIFIED VALUES(602,102)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.1225 seconds.)

INSERT INTO CERTIFIED VALUES(603,102)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.0468 seconds.)

INSERT INTO CERTIFIED VALUES(603,103)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.0330 seconds.)

INSERT INTO CERTIFIED VALUES(604,104)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.0376 seconds.)

INSERT INTO CERTIFIED VALUES(604,105)

[Edit inline] [Edit] [Create PHP code]

✔ 1 row inserted. (Query took 0.0426 seconds.)

INSERT INTO CERTIFIED VALUES(605,105)

[Edit inline] [Edit] [Create PHP code]

✔ Showing rows 0 - 7 (8 total, Query took 0.0047 seconds.)

SELECT * FROM CERTIFIED

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows: 25 ⌄   Filter rows: [Search this table]   Sort by key: None ⌄

+ Options

EID	AID
601	101
601	102
602	102
603	102
603	103
604	104
604	105
605	105

1. **Find the names of aircraft such that all pilots certified to operate them have salaries more than Rs. 80,000.**

Showing rows 0 - 1 (2 total, Query took 0.2238 seconds.)

```sql
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 SALARY>80000))
```

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows: 25 ∨ | Filter rows: Search this table | Sort by key: None ∨

+ Options

		ANAME
☐	🖉 Edit ⚡ Copy ⊖ Delete	747
☐	🖉 Edit ⚡ Copy ⊖ Delete	Dreamliner

2. **For each pilot who is certified for more than one aircraft, find the EID and the maximum cruising range of the aircraft for she/he is certified to fly.**

Showing rows 0 - 2 (3 total, Query took 0.0413 seconds.)

```sql
SELECT MAX(A.CRUISINGRANGE),C.EID FROM certified C, aircraft A WHERE C.AID=A.AID GROUP BY C.EID HAVING COUNT(C.EID)>1
```

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows: 25 ∨ | Filter rows: Search this table

+ Options

MAX(A.CRUISINGRANGE)	EID
3000	601
1500	603
10000	604

3. **Find the names of pilots whose salary is less than the price of the cheapest route from New York to Bangalore.**

Showing rows 0 - 0 (1 total, Query took 0.0047 seconds.)

```sql
SELECT ENAME FROM employees WHERE SALARY < (SELECT MIN(PRICE) FROM flights WHERE FROMPLACE='New York' AND TOPLACE='Bangalore')
```

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows: 25 ∨ | Filter rows: Search this table

+ Options

		ENAME
☐	🖉 Edit ⚡ Copy ⊖ Delete	E

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.**

Showing rows 0 - 3 (4 total, Query took 0.0499 seconds.)

```sql
SELECT AVG(E.SALARY), C.AID FROM certified C,employees E WHERE C.AID IN(SELECT AID FROM aircraft WHERE CRUISINGRANGE>1000) AND E.EID=C.EID
GROUP BY C.AID
```

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows: 25 ∨ | Filter rows: Search this table

+ Options

AVG(E.SALARY)	AID
60000.0000	101
100000.0000	102
120000.0000	104
80000.0000	105

5. Find the names of the pilot for some Boeing aircraft.

```
SELECT ENAME FROM employees WHERE EID IN(SELECT EID FROM certified WHERE AID IN(SELECT AID FROM aircraft WHERE ANAME='Boeing'))
```

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows: 25 ⌄   Filter rows: Search this table

+ Options

←T→				ENAME
☐	🖉 Edit	Copy	⊖ Delete	D

6. Find the aids of all aircraft that can be used on routes from Delhi to Bangalore.

```
SELECT ANAME FROM aircraft WHERE CRUISINGRANGE > ANY(SELECT DISTANCE FROM flights WHERE FROMPLACE='Delhi' AND TOPLACE='Bangalore')
```

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows: 25 ⌄   Filter rows: Search this table

+ Options

←T→				ANAME
☐	🖉 Edit	Copy	⊖ Delete	Boeing