DATABASE MANAGEMENT SYSTEMS LABORATORY

(Effective from the Academic Year 2023 - 2024)

V SEMESTER

Course Code	**21CSL55**	CIA Marks	50
Number of Contact Hours/Week (L: T: P: S)	0:0:2:0	SEE Marks	50
Total Hours of Pedagogy	20P	Exam Hours	03

EXPERIMENT SOLUTION

5

Consider the schema for Airline Database:

Flights (Flight_num, Source, Destination, Distance, Departs, Arrives, Price)

Aircraft (Aid, Aname, Cruising_range)

Certified (Emp_id, Aid)

Employees (Emp_id, Ename, Salary)

Note: 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.

```
CREATE TABLE AIRCRAFT (
AID INT,
ANAME VARCHAR(15),
CRUISINGRANGE INT,
PRIMARY KEY (AID));
```

```
CREATE TABLE FLIGHTS (
FLIGHT_NUM INT,
SOURCE VARCHAR(15),
DESTINATION VARCHAR(15),
DISTANCE INT,
DEPARTS VARCHAR(05),
ARRIVES VARCHAR(05),
PRICES INT,
PRIMARY KEY(FLIGHT_NUM),
FOREIGN KEY (FLIGHT_NUM) REFERENCES AIRCRAFT(AID) ON DELETE CASCADE);
```

```
CREATE TABLE EMPLOYEES(
EMP_ID VARCHAR(10),
ENAME VARCHAR(15),
SALARY INT,
PRIMARY KEY (EMP_ID));
```

```
CREATE TABLE CERTIFIED(
EMP_ID INT,
AID INT,
PRIMARY KEY(EID,AID),
FOREIGN KEY (EMP_ID) REFERENCES EMPLOYEES(EMP_ID) ON DELETE CASCADE,
FOREIGN KEY (AID) REFERENCES AIRCRAFT(AID) ON DELETE CASCADE);
```

Write SQL queries to

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

```
SELECT ANAME
FROM AIRCRAFT A, CERTIFIED C, EMPLOYEES E
WHERE A.AID=C.AID AND C. EMP_ID =E. EMP_ID AND E.SALARY >80000;
```

2. For each pilot who is certified for more than three aircrafts, find the emp_id and the maximum cruisingrange of the aircraft for which she or he is certified.

```
SELECT C. EMP_ID, MAX(A.CRUISINGRANGE)
FROM AIRCRAFT A, CERTIFIED C
WHERE A.AID=C.AID
GROUP BY EMP_ID HAVING COUNT(AID)>3;
```

3. Find the names of pilots whose salary is less than the price of the cheapest route from Bengaluru to Mumbai.

```
SELECT DISTINCT ENAME FROM EMPLOYEES E, CERTIFIED C, AIRCRAFT A, FLIGHT F
WHERE E.EMP_ID =C.EMP_ID AND C.AID=A.AID AND A.AID=F. FLIGHT_NUM AND E.SALARY < ( SELECT MIN(PRICE)
                    FROM FLIGHT
                    WHERE SOURCE='BANGALORE' AND DESTINATION= 'MUMBAI');
```

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

```
SELECT A. AID
FROM AIRCRAFT A , FLIGHT F
WHERE A.AID=F.FLIGHT_NUM AND F.SOURCE='BENGALURU' AND F.DESTINATION= 'NEW DELHI';
```

5. Find the employee name and salary earning second highest salary.

```
SELECT ENAME, MAX(SALARY) AS SALARY
FROM EMPLOYEES
WHERE SALARY IN
        (SELECT SALARY FROM EMPLOYEE MINUS SELECT MAX(SALARY)
        FROM EMPLOYEES);
```

COURSE OUTCOMES

Upon completion of this course, the students will be able to:

CO No.	Course Outcome Description	Bloom's Taxonomy Level
CO1	Use SQL programming and different concepts of DBMS to create, update and query on the Bank and Library databases.	CL3
CO2	Demonstrate SQL programming and different concepts of DBMS to create, update and query on the College database.	CL3
CO3	Illustrate the concepts of SQL programming and DBMS to create, update and query on the Company database.	CL3
CO4	Create, update and query on the Airline database by using different concepts of DBMS and SQL programming.	CL3
CO5	Design, implement and demonstrate a database application using front end tools and Compile the working with well document using modern tool.	CL6

CO-PO-PSO MAPPING

CO No.	Programme Outcomes (PO)												Programme Specific Outcome (PSO)	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	3	2	2			1				2		
CO2	3	3	3	2	2			1				2		
CO3	3	3	3	2	2			1				2		
CO4	3	3	3	2	2			1				2		
CO5	3	3	3	3	3	2		3	3	3	3	2		

3: Substantial (High) | **2: Moderate (Medium)** | **1: Poor (Low)**