STAT311 - Recitation 9 Answers

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Published: Dec 12, 2024

SchemaDefinition, Constraints, and Queries and Views

Below is the table schema for the Company Database. Locate the database dump file and import it into phpMyAdmin. Ensure that the relationships are correctly established, and then proceed to solve the queries listed below.

(a)

Bdate	Address
1965-01-09	731Fondren, Houston, TX

(b)

Fname	Lname	Address
John	Smith	731 Fondren, Houston, TX
Franklin	Wong	638 Voss, Houston, TX
Ramesh	Narayan	975 Fire Oak, Humble, TX
Joyce	English	5631 Rice, Houston, TX

(c)

Pnumber	Dnum	Lname	Address	Bdate
10	4	Wallace	291Berry, Bellaire, TX	1941-06-20
30	4	Wallace	291Berry, Bellaire, TX	1941-06-20

(d)

E.Fname	E.Lname	S.Fname	S.Lname
John	Smith	Franklin	Wong
Franklin	Wong	James	Borg
Alicia	Zelaya	Jennifer	Wallace
Jennifer	Wallace	James	Borg
Ramesh	Narayan	Franklin	Wong
Joyce	English	Franklin	Wong
Ahmad	Jabbar	Jennifer	Wallace

(e)

E.Fname
123456789
333445555
999887777
987654321
666884444
453453453
987987987
888665555

(f)

Ssn	Dname
123456789	Research
333445555	Research
999887777	Research
987654321	Research
666884444	Research
453453453	Research
987987987	Research
888665555	Research
123456789	Administration
333445555	Administration
999887777	Administration
987654321	Administration
666884444	Administration
453453453	Administration
987987987	Administration
888665555	Administration
123456789	Headquarters
333445555	Headquarters
999887777	Headquarters
987654321	Headquarters
666884444	Headquarters
453453453	Headquarters
987987987	Headquarters
888665555	Headquarters

(g)

Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary	Super_ssn	Dno
John	B	Smith	123456789	1965-09-01	731 Fondren, Houston, TX	M	30000	333445555	5
Franklin	T	Wong	333445555	1955-12-08	638 Voss, Houston, TX	M	40000	888665555	5
Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	M	38000	333445555	5
Joyce	A	English	453453453	1972-07-31	5631 Rice, Houston, TX	F	25000	333445555	5

The following link will take you to all of the solutions and SQL files related to the recitation.

1- List all employees and their salaries.

```
SELECT Fname, Lname, Salary FROM EMPLOYEE
```

2- Find the names of all departments.

```
SELECT Dname FROM DEPARTMENT
```

3- List all projects and their locations.

```
SELECT Pname, Plocation FROM PROJECT
```

4- Retrieve the birthdate of the employee with Ssn = '123456789'.

```
SELECT Bdate FROM EMPLOYEE WHERE Ssn = '123456789'
```

5- Find all dependent names of the employee with Ssn = '333445555'.

```
SELECT Dependent_name FROM DEPENDENT WHERE Essn = '333445555'
```

6 - Find the names of employees who work on project 'ProductX'.

```
SELECT Fname, Lname  FROM EMPLOYEE, WORKS_ON WHERE EMPLOYEE.Ssn =
WORKS_ON.Essn AND WORKS_ON.Pno = 1
```

7 - Retrieve the names of employees who work more than 30 hours on any project.

```
SELECT Fname, Lname  FROM EMPLOYEE, WORKS_ON
WHERE EMPLOYEE.Ssn = WORKS_ON.Essn AND WORKS_ON.Hours > 30;
```

8 - Find the total salary of employees in department 5.

```
SELECT SUM(Salary) AS Total_Salary  FROM EMPLOYEE
WHERE Dno = 5;
```

9 - List all projects managed by department 4 along with their locations.

```
SELECT Pname, Plocation FROM PROJECT
WHERE Dnum = 4;
```

10 - Retrieve the names of employees who are managers of any department.

```
SELECT Fname, Lname  FROM EMPLOYEE, DEPARTMENT
WHERE EMPLOYEE.Ssn = DEPARTMENT.Mgr_ssn;
```

11 - Find the names of employees who work on projects located in the same city as their address.

```
SELECT E.Fname, E.Lname, P.Pname, P.Plocation FROM EMPLOYEE E
```

```
JOIN WORKS_ON W ON E.Ssn = W.Essn
JOIN PROJECT P ON W.Pno = P.Pnumber
WHERE E.Address LIKE CONCAT('%', P.Plocation, '%');
```

12 - List the departments with more than one location.

```
SELECT Dnumber  FROM DEPT_LOCATIONS
GROUP BY Dnumber
HAVING COUNT(Dlocation) > 1;
```

13 - Find the names of employees who supervise other employees.

```
SELECT DISTINCT E1.Fname, E1.Lname  FROM EMPLOYEE E1, EMPLOYEE E2
WHERE E1.Ssn = E2.Super_ssn;
```

14 - List the names of employees who manage a department and also work on at least one project.

```
SELECT DISTINCT E.Fname, E.Lname FROM EMPLOYEE E
JOIN DEPARTMENT D ON E.Ssn = D.Mgr_ssn
JOIN WORKS_ON W ON E.Ssn = W.Essn;
```

15 - Find the average salary of employees in each department.

```
SELECT Dno, AVG(Salary) AS Avg_Salary FROM EMPLOYEE
GROUP BY Dno;
```

16 - Find the names of employees whose dependents are female.

```
SELECT DISTINCT Fname, Lname FROM EMPLOYEE, DEPENDENT
WHERE EMPLOYEE.Ssn = DEPENDENT.Essn AND DEPENDENT.Sex = 'F';
```

17 - List the projects and the total hours worked on them by all employees.

```
SELECT Pname, SUM(Hours) AS Total_Hours FROM PROJECT, WORKS_ON
WHERE PROJECT.Pnumber = WORKS_ON.Pno
GROUP BY Pnumber;
```

18 - Find the names of employees and their supervisors, along with the departments they belong to.

```
SELECT E.Fname AS Employee_Name, E.Lname AS Employee_LastName, S.Fname AS
Supervisor_Name, S.Lname AS Supervisor_LastName, D.Dname AS Department
FROM EMPLOYEE E
LEFT JOIN EMPLOYEE S ON E.Super_ssn = S.Ssn
JOIN DEPARTMENT D ON E.Dno = D.Dnumber;
```

19 - List the names of departments whose managers have at least 3 dependents.

```
SELECT Dname FROM DEPARTMENT, DEPENDENT
WHERE DEPARTMENT.Mgr_ssn = DEPENDENT.Essn
GROUP BY Dname
HAVING COUNT(Dependent_name) >= 3;
```

20 - Retrieve the names of employees who earn more than the average salary of their department.

```
SELECT Fname, Lname FROM EMPLOYEE E1
WHERE Salary > (
    SELECT AVG(Salary)
    FROM EMPLOYEE E2
    WHERE E1.Dno = E2.Dno);
```

21. List the names of employees who have dependents and also work on projects in Stafford.

```
SELECT DISTINCT E.Fname, E.Lname  FROM EMPLOYEE E
JOIN DEPENDENT D ON E.Ssn = D.Essn
JOIN WORKS_ON W ON E.Ssn = W.Essn
JOIN PROJECT P ON W.Pno = P.Pnumber
WHERE P.Plocation = 'Stafford';
```

Attention that, in the below questions you need to create new tables so let's back to creating database part and add some new tables.

```
CREATE TABLE SALES (
    SALENO INT PRIMARY KEY,
    VOLUME INT NOT NULL,
    ITEM VARCHAR(50) NOT NULL,
    DEPT VARCHAR(15) NOT NULL,
    FOREIGN KEY (ITEM) REFERENCES PROJECT(Pname),
    FOREIGN KEY (DEPT) REFERENCES DEPARTMENT(Dname)
);

INSERT INTO SALES (SALENO, VOLUME, ITEM, DEPT)
VALUES
(1001, 2, 'ProductX', 'Research'),
(1002, 1, 'ProductY', 'Research'),
(1003, 1, 'ProductZ', 'Research'),
(1004, 3, 'Computerization', 'Administration'),
(1005, 5, 'Reorganization', 'Headquarters');

CREATE TABLE SUPPLIERS (
    SNO INT PRIMARY KEY,
    SNAME VARCHAR(50) NOT NULL,
    CITY VARCHAR(50) NOT NULL
);

INSERT INTO SUPPLIERS (SNO, SNAME, CITY)
VALUES
(101, 'Global Books & Maps', 'New York'),
(102, 'Nepalese Corp.', 'Kathmandu'),
(103, 'All Sports Manufacturing', 'Los Angeles'),
(104, 'Sweatshops Unlimited', 'Houston'),
(105, 'All Points, Inc.', 'Dallas');

CREATE TABLE SUPPLY (
    DELNO INT PRIMARY KEY,
    DELQTY INT NOT NULL,
    ITEMNAME VARCHAR(50) NOT NULL,
    DEPTNAME VARCHAR(15) NOT NULL,
    SPLNO INT NOT NULL,
    FOREIGN KEY (ITEMNAME) REFERENCES PROJECT(Pname),
```

```
        FOREIGN KEY (DEPTNAME) REFERENCES DEPARTMENT(Dname),
        FOREIGN KEY (SPLNO) REFERENCES SUPPLIERS(SNO)
);
INSERT INTO SUPPLY (DELNO, DELQTY, ITEMNAME, DEPTNAME, SPLNO)
VALUES
(51, 50, 'ProductX', 'Research', 105),
(52, 10, 'ProductY', 'Administration', 105),
(53, 10, 'ProductZ', 'Research', 103),
(61, 2, 'Computerization', 'Administration', 101),
(62, 1, 'Reorganization', 'Headquarters', 104);
```

22- Find suppliers who supply items to all departments belongs to Dnumber is 2.
Please write this query into SUPPLIERS table.

```
SELECT S.Sname
FROM SUPPLIERS S
WHERE NOT EXISTS (
    SELECT D.Dname
    FROM DEPARTMENT D
    WHERE D.Dnum = 2 AND D.Dname NOT IN (
        SELECT SP.DEPTNAME
        FROM SUPPLY SP
        WHERE SP.SPLNO = S.Sno
    ));
```

23 - List the departments where the number of employees is greater than the number of projects assigned to the department. (empty result)

```
SELECT D.Dname, COUNT(E.Ssn) AS Employee_Count, COUNT(P.Pnumber) AS
Project_Count
FROM DEPARTMENT D
LEFT JOIN EMPLOYEE E ON D.Dnumber = E.Dno
LEFT JOIN PROJECT P ON D.Dnumber = P.Dnum
GROUP BY D.Dname
HAVING COUNT(E.Ssn) > COUNT(P.Pnumber);
```

24 - Retrieve the names of employees and the total number of items they sold. (Apply in Sales table)

```
SELECT E.Fname AS Employee_Name, E.Lname AS Employee_LastName,
SUM(S.VOLUME) AS Total_Items_Sold
FROM EMPLOYEE E
JOIN SALES S ON E.Dno = (SELECT Dnumber FROM DEPARTMENT WHERE Dname =
S.DEPT)
GROUP BY E.Fname, E.Lname;
```

25 - Find employees who work on the same projects as their supervisors.

```
SELECT DISTINCT E.Fname AS Employee_Name, S.Fname AS Supervisor_Name,
P.Pname AS Project_Name
FROM EMPLOYEE E
JOIN WORKS_ON W1 ON E.Ssn = W1.Essn
JOIN EMPLOYEE S ON E.Super_ssn = S.Ssn
JOIN WORKS_ON W2 ON S.Ssn = W2.Essn AND W1.Pno = W2.Pno
JOIN PROJECT P ON W1.Pno = P.Pnumber;
```

Have a healthy and happy week!