Assignment 1 Part 3 of 3

Launching into Computer Science

README

SQL programming exercise

This project used the provided and fictional COMPANY1 database with two tables: EMP, which included employee data, and DEPT, which contained department data that had to be used to build SQL queries. A foreign key called DEPTNO in the EMP table refers to the primary key with the same name in the DEPT table. SQL scripts were provided according to the following tasks:

1. **List all Employees whose salary is greater than 1,000 but not 2,000. Show the Employee Name, Department and Salary.**

   To retrieve the data of employees whose salary is greater than 1,000 but not 2,000, it was created and used the following SQL query:

```sql
SELECT ENAME, DEPTNO, SAL
FROM EMP
WHERE SAL > 1000 AND SAL < 2000;
```

   This query selects the name of the employee (ENAME), the department number (DEPTNO) and the salary (SAL) from the EMP table where the salary is greater than 1,000 and less than 2,000.

   Output:

   So, there are 6 employees who receive a salary, which is greater than 1,000 and less than 2,000.

```
+--------+--------+---------+
| ENAME  | DEPTNO | SAL     |
+--------+--------+---------+
| ALLEN  |     30 | 1600.00 |
| WARD   |     30 | 1250.00 |
| MARTIN |     30 | 1250.00 |
| TURNER |     30 | 1500.00 |
| ADAMS  |     20 | 1100.00 |
| MILLER |     10 | 1300.00 |
+--------+--------+---------+
6 rows in set (0.000 sec)
```

2. **Count the number of people in department 30 who receive a salary and a commission.**

   The following SQL query was developed and used to obtain information on the counted number of people in department 30 who earn both salary and commission:

```sql
SELECT COUNT(*)
FROM EMP
WHERE DEPTNO = 30 AND COMM IS NOT NULL;
```

   This query counts the number of rows in the EMP database where the commission (COMM) is not null and the department number (DEPTNO) is 30—both of which indicate that the employee gets paid a commission.

   Output:

   So, there are 4 employees in department 30 who receive both a salary and a commission.

```
+----------+
| COUNT(*) |
+----------+
|        4 |
+----------+
1 row in set (0.000 sec)
```

3. **Find the name and salary of employees having salary greater or equal to 1,000 and live in Dallas.**

   To obtain the names and salaries of employees who reside in Dallas and have a salary greater than or equal to 1,000, a join operation is performed between the EMP and DEPT tables in the DEPTNO column. A filter was then applied to the results according to the given criteria. The SQL query is as follows:

```
SELECT e.ENAME, e.SAL
FROM EMP e
JOIN DEPT d ON e.DEPTNO = d.DEPTNO
WHERE e.SAL >= 1000 AND d.LOC = 'DALLAS';
```

   This query joins the EMP table with the DEPT table in the DEPTNO column, extracting the employee name (ENAME) and salary (SAL). The results were further filtered to show only Dallas-based workers with a salary greater than or equal to 1,000.

   Output:

   So, four employees have a salary greater than or equal to 1,000 and lives in Dallas.

```
+-------+---------+
| ENAME | SAL     |
+-------+---------+
| JONES | 2975.00 |
| SCOTT | 3000.00 |
| ADAMS | 1100.00 |
| FORD  | 3000.00 |
+-------+---------+
4 rows in set (0.000 sec)
```

4. **Find all departments that do not have any current employees.**

   To obtain all departments that do not have any active workers, a left join operation is performed between the DEPT table and the EMP table, and then the departments

where no employee records exist are filtered out. The SQL query for this is as follows:

```
SELECT D.DEPTNO, D.DNAME, D.LOC
FROM DEPT D
LEFT JOIN EMP E ON D.DEPTNO = E.DEPTNO
WHERE E.DEPTNO IS NULL;
```

This query selects the department number (DEPTNO), department name (DNAME), and location (LOC) from the DEPT table. Subsequently, a left join is performed using the department number and the EMP table. The WHERE clause filters out departments where there are no corresponding employee records (i.e., where the DEPTNO from the EMP table is NULL after the left join).

Output:

Hence, there are now no employees in the Boston department "OPERATIONS".

```
+--------+------------+--------+
| DEPTNO | DNAME      | LOC    |
+--------+------------+--------+
|     40 | OPERATIONS | BOSTON |
+--------+------------+--------+
1 row in set (0.000 sec)
```

5. **List the department number and the average salary and count of employees of each department.**

   To calculate the average salary it was used the AVG() function and to count the number of employees of each department used the COUNT() function. The SQL query for this is as follows:

```
SELECT DEPTNO,
       AVG(SAL) AS avg_salary,
       COUNT(*) AS employee_count
FROM EMP
GROUP BY DEPTNO;
```

This query selects the department number (DEPTNO), calculates the average salary (AVG(SAL)), and counts the number of employees (COUNT(*)) for each department from the EMP table. The results are grouped based on the department number.

Output:

- Department 10 (Accounting) employs 3 people and pays an average salary of around 2916.67.
- Department 20 (Research) employs 5 people and pays an average salary of 2175.
- Department 30 (Sales) employs 6 people, and pays an average salary of 1566.67.

```
+--------+-------------+----------------+
| DEPTNO | avg_salary  | employee_count |
+--------+-------------+----------------+
|     10 | 2916.666667 |              3 |
|     20 | 2175.000000 |              5 |
|     30 | 1566.666667 |              6 |
+--------+-------------+----------------+
3 rows in set (0.000 sec)
```