SQL Exercise

For this SQL exercise, we require two tables - `DEPT`, and `EMP`. The code is available in the [UoEO-Module-1-SQL-Exercise](#) GitHub repository.

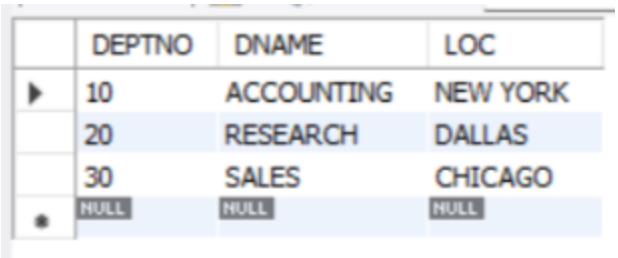
Table Creation and Data Generation

DEPT Table

```
CREATE TABLE DEPT (
    DEPTNO INT PRIMARY KEY,
    DNAME VARCHAR(50),
    LOC VARCHAR(50)
);

INSERT INTO DEPT (DEPTNO, DNAME, LOC) VALUES
(10, 'ACCOUNTING', 'NEW YORK'),
(20, 'RESEARCH', 'DALLAS'),
(30, 'SALES', 'CHICAGO');

SELECT * FROM DEPT;
```



	DEPTNO	DNAME	LOC
▶	10	ACCOUNTING	NEW YORK
	20	RESEARCH	DALLAS
	30	SALES	CHICAGO
*	NULL	NULL	NULL

EMP Table

```
CREATE TABLE EMP (
    EMPNO INT PRIMARY KEY,
    ENAME VARCHAR(50),
    JOB VARCHAR(50),
    MGR INT,
    HIREDATE VARCHAR(9),
    SAL INT,
    COMM INT,
    DEPTNO INT,
    FOREIGN KEY (DEPTNO)
        REFERENCES DEPT (DEPTNO)
);

INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO)
VALUES
(7369, 'SMITH', 'CLERK', 7902, '17-DEC-80', 800, NULL, 20),
(7499, 'ALLEN', 'SALESMAN', 7698, '20-FEB-81', 1600, 300, 30),
```

```
(7521, 'WARD', 'SALESMAN', 7698, '22-FEB-81', 1250, 500, 30),
(7566, 'JONES', 'MANAGER', 7839, '02-APR-81', 2975, NULL, 20),
(7654, 'MARTIN', 'SALESMAN', 7698, '28-SEP-81', 1250, 1400, 30),
(7698, 'BLAKE', 'MANAGER', 7839, '01-MAY-81', 2850, NULL, 30),
(7782, 'CLARK', 'MANAGER', 7839, '09-JUN-81', 2450, NULL, 10),
(7788, 'SCOTT', 'ANALYST', 7566, '19-APR-87', 3000, NULL, 20),
(7839, 'KING', 'PRESIDENT', NULL, '17-NOV-81', 5000, NULL, 10),
(7844, 'TURNER', 'SALESMAN', 7698, '08-SEP-81', 1500, 0, 30),
(7876, 'ADAMS', 'CLERK', 7788, '23-MAY-87', 1100, NULL, 20),
(7900, 'JAMES', 'CLERK', 7698, '03-DEC-81', 950, NULL, 30),
(7902, 'FORD', 'ANALYST', 7566, '03-DEC-81', 3000, NULL, 20),
(7934, 'MILLER', 'CLERK', 7782, '23-JAN-82', 1300, NULL, 10);

SELECT * FROM EMP;
```

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	17-DEC-80	800	NULL	20
7499	ALLEN	SALESMAN	7698	20-FEB-81	1600	300	30
7521	WARD	SALESMAN	7698	22-FEB-81	1250	500	30
7566	JONES	MANAGER	7839	02-APR-81	2975	NULL	20
7654	MARTIN	SALESMAN	7698	28-SEP-81	1250	1400	30
7698	BLAKE	MANAGER	7839	01-MAY-81	2850	NULL	30
7782	CLARK	MANAGER	7839	09-JUN-81	2450	NULL	10
7788	SCOTT	ANALYST	7566	19-APR-87	3000	NULL	20
7839	KING	PRESIDENT	NULL	17-NOV-81	5000	NULL	10
7844	TURNER	SALESMAN	7698	08-SEP-81	1500	0	30
7876	ADAMS	CLERK	7788	23-MAY-87	1100	NULL	20
7900	JAMES	CLERK	7698	03-DEC-81	950	NULL	30
7902	FORD	ANALYST	7566	03-DEC-81	3000	NULL	20
7934	MILLER	CLERK	7782	23-JAN-82	1300	NULL	10
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

SQL Scripts

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

   Solution:

   ```
   SELECT ENAME AS 'Employee Name', DNAME AS 'Department', SAL AS 'Salary'
   FROM EMP E
   JOIN DEPT D ON E.DEPTNO = D.DEPTNO
   WHERE SAL > 1000 AND SAL < 2000;
   ```

   Alternative:

```
SELECT ENAME AS 'Employee Name', DNAME AS 'Department', SAL AS
'Salary'
FROM EMP E
JOIN DEPT D ON E.DEPTNO = D.DEPTNO
WHERE SAL BETWEEN 1001 AND 1999;
```

Explanation:

The above queries return the employee name, department name, and salary for employees whose salary is greater than 1,000 but less than 2,000.

Employee Name	Department	Salary
MILLER	ACCOUNTING	1300
ADAMS	RESEARCH	1100
ALLEN	SALES	1600
WARD	SALES	1250
MARTIN	SALES	1250
TURNER	SALES	1500

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

Solution:

```
SELECT COUNT(*) AS 'Number of Employees'
FROM EMP
WHERE DEPTNO = 30 AND SAL > 0 AND COMM > 0;
```

Alternative:

```
SELECT COUNT(*) AS 'Number of Employees'
FROM EMP
```

```
WHERE DEPTNO = 30 AND SAL >= 1 AND COMM >= 1;
```

Explanation:

The above queries return the count of employees in department 30 who receive both, a salary and a commission.

	Number of Employees
▶	3

3. Find the name and salary of the employees that have a salary greater or equal to 1,000 and live in Dallas.

   Solution:

```
SELECT ENAME AS 'Employee Name', SAL AS 'Salary'
FROM EMP E
JOIN DEPT D ON E.DEPTNO = D.DEPTNO
WHERE SAL >= 1000 AND LOC = 'DALLAS';
```

   Alternative:

```
SELECT ENAME AS 'Employee Name', SAL AS 'Salary'
FROM EMP E
JOIN DEPT D ON E.DEPTNO = D.DEPTNO
WHERE SAL > 999 AND LOC = 'DALLAS';
```

   Explanation:

   The above queries return the employee name and salary for Dallas-based employees who have a salary of 1,000 or more.

	Employee Name	Salary
▶	JONES	2975
	SCOTT	3000
	ADAMS	1100
	FORD	3000

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

   Solution:

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

   Alternative:

```
SELECT DEPTNO, DNAME
FROM DEPT
WHERE DEPTNO NOT IN (SELECT DISTINCT DEPTNO FROM EMP);
```

   Explanation:

   The above queries return the department no. and names of the departments that do not have any employees.

	DEPTNO	DNAME

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

   Solution:

```
SELECT DEPTNO, AVG(SAL) AS 'Average Salary', COUNT(*) AS 'Number
of Employees'
FROM EMP
GROUP BY DEPTNO;
```

Alternative:

```
SELECT DEPTNO, AVG(SAL) AS 'Average Salary', COUNT(*) AS 'Number
of Employees'
FROM EMP
GROUP BY DEPTNO
HAVING COUNT(*) > 0;
```

Explanation:

The above queries return the average salary and count of employees for each department.

	DEPTNO	Average Salary	Number of Employees
▶	10	2916.67	3
	20	2175.00	5
	30	1566.67	6