# Database Systems

## Fall 2020

## LAB – 05

**The objective of this lab is to:**

- SQL Joins

**Course & Lab Instructor:** Sir Asif Sohail

Instructions:

- Work on this lab individually. Discussion is not allowed.
- Evaluation of tasks will be conducted in lab.
- Anyone caught being indulged in the act of plagiarism would be awarded an "F" grade in this lab.
- Evaluation will be considered final and you cannot debate for the marks. So, focus on performing the tasks when the time is given to you.
- **Allowed time: 1 hour**
- Best of Luck!

**Note:** You will be using following tables in your lab tasks.

- EMP (EMPNO, ENAME, JOB, SAL, HIREDATE, COMM, MGR, DEPTNO)
- DEPT (DEPTNO, DNAME, LOC)
- SALGRADE (Grade, HISAL, LOSAL)
- PUCIT (STD_NAME)

**Perform the following tasks**

## Task 01: [20 Marks]

1. **Show those departments that have no any employee.**
   **Solution:**
   Select dname , count(empno) from emp e right join dept d on e.deptno=d.deptno
   group by dname
   having count(empno)=0

| DNAME | COUNT(EMPNO) |
|---|---|
| OPERATIONS | 0 |

2. **List all employees whose location is 'CHICAGO'**
   **Solution:**

   Select emp.empno, emp.ename, emp.deptno,dept.deptno, dept.loc from emp Join dept

   on emp.deptno = dept.deptno

   where loc = 'CHICAGO'

| EMPNO | ENAME | DEPTNO | DEPTNO | LOC |
|---|---|---|---|---|
| 7499 | ALLEN | 30 | 30 | CHICAGO |
| 7521 | WARD | 30 | 30 | CHICAGO |
| 7654 | MARTIN | 30 | 30 | CHICAGO |
| 7698 | BLAKE | 30 | 30 | CHICAGO |
| 7844 | TURNER | 30 | 30 | CHICAGO |
| 7900 | JAMES | 30 | 30 | CHICAGO |

3. **Show the employees of Accounting department.**
   **Solution:**
   Select e.ename, d.deptno, d.dname from emp e join dept d
   on e.deptno = d.deptno
   where d.dname = 'ACCOUNTING'

| ENAME | DEPTNO | DNAME |
|---|---|---|
| CLARK | 10 | ACCOUNTING |
| KING | 10 | ACCOUNTING |

4. **Get the highest salaries of all the departments from dept table.**
   **Display the output in the following format.**

| DNAME | MAX(SAL) |
|---|---|
| RESEARCH | 3000 |
| SALES | 2850 |

| | |
|---|---|
| ACCOUNTING | 5000 |
| OPERATIONS | - |

**Solution:**

Select dname , max(sal) from emp e right join dept d on e.deptno = d.deptno group by d.dname

5. **Display salary grade of each employee on the basis of salary range from salgrade table.**

**Solution:**

Select ename, sal, grade from emp join salgrade
on sal between losal and hisal;

**OR**

Select ename, sal, grade from emp, salgrade
where sal between losal and hisal;

| ENAME | SAL | GRADE |
|---|---|---|
| SMITH | 800 | 1 |
| JAMES | 950 | 1 |
| ADAMS | 1100 | 1 |
| WARD | 1250 | 2 |
| MARTIN | 1250 | 2 |
| TURNER | 1500 | 3 |
| ALLEN | 1600 | 3 |
| CLARK | 2450 | 4 |
| BLAKE | 2850 | 4 |
| JONES | 2975 | 4 |

6. **Show the output like "Smith is the Clerk of Sales Department with salary 1600 from NewYork."**

   **Solution:**

   Select e.ename||' is the '||e.job||' of '||d.dname||' with '||e.sal||' from '||loc as "Emp Details" from emp e join dept d on e.deptno=d.deptno;

| Emp Details |
|---|
| SMITH is the CLERK of RESEARCH with 800 from DALLAS |
| ALLEN is the SALESMAN of SALES with 1600 from CHICAGO |
| WARD is the SALESMAN of SALES with 1250 from CHICAGO |
| JONES is the MANAGER of RESEARCH with 2975 from DALLAS |
| MARTIN is the SALESMAN of SALES with 1250 from CHICAGO |
| BLAKE is the MANAGER of SALES with 2850 from CHICAGO |
| CLARK is the MANAGER of ACCOUNTING with 2450 from NEW YORK |
| SCOTT is the ANALYST of RESEARCH with 3000 from DALLAS |
| KING is the PRESIDENT of ACCOUNTING with 5000 from NEW YORK |
| TURNER is the SALESMAN of SALES with 1500 from CHICAGO |

7. **Dsiplay ename, job, deptno, dname from emp and dept table using left outer join**

   **Solution:**

   Select e.ename, e.job , e.deptno , dname from emp e left outer join dept d
   on e.deptno = d.deptno

| ENAME | JOB | DEPTNO | DNAME |
|---|---|---|---|
| CLARK | MANAGER | 10 | ACCOUNTING |
| KING | PRESIDENT | 10 | ACCOUNTING |
| SMITH | CLERK | 20 | RESEARCH |
| JONES | MANAGER | 20 | RESEARCH |
| SCOTT | ANALYST | 20 | RESEARCH |

| | | | |
|---|---|---|---|
| ADAMS | CLERK | 20 | RESEARCH |
| FORD | ANALYST | 20 | RESEARCH |
| ALLEN | SALESMAN | 30 | SALES |
| WARD | SALESMAN | 30 | SALES |
| MARTIN | SALESMAN | 30 | SALES |

8. **Display department name and department location and grade (on basis of salary) of each employee**
   **Solution:**

```
Select e.ename, e.deptno, d.loc,d.dname, s.grade
from EMP e join DEPT d on e.deptno = d.deptno join salgrade s on
e.sal between  s.losal and s.hisal;
```

**OR**

```
Select e.ename, e.deptno, d.loc,d.dname, s.grade
from EMP e, DEPT d, salgrade s
where e.deptno = d.deptno and
e.sal between  s.losal and hisal;
```

| ENAME | DEPTNO | LOC | DNAME | GRADE |
|---|---|---|---|---|
| CLARK | 10 | NEW YORK | ACCOUNTING | 4 |
| KING | 10 | NEW YORK | ACCOUNTING | 5 |
| SMITH | 20 | DALLAS | RESEARCH | 1 |
| ADAMS | 20 | DALLAS | RESEARCH | 1 |
| JONES | 20 | DALLAS | RESEARCH | 4 |
| FORD | 20 | DALLAS | RESEARCH | 4 |
| SCOTT | 20 | DALLAS | RESEARCH | 4 |

| | | | | |
|---|---|---|---|---|
| JAMES | 30 | CHICAGO | SALES | 1 |
| WARD | 30 | CHICAGO | SALES | 2 |
| MARTIN | 30 | CHICAGO | SALES | 2 |

9. **List the ename, deptno and dept location, job in the asc order of job of those joined after the second half of 1981.**
   **Solution:**
   Select e.ename, e.job, d.deptno, d.loc, e.hiredate from emp e join dept d
   on e.deptno = d.deptno
   where to_number(to_char(hiredate, 'mm'))>=7 and to_char(hiredate, 'yyyy') = '1981'

| ENAME | JOB | DEPTNO | LOC | HIREDATE |
|---|---|---|---|---|
| MARTIN | SALESMAN | 30 | CHICAGO | 09/28/1981 |
| KING | PRESIDENT | 10 | NEW YORK | 11/17/1981 |
| TURNER | SALESMAN | 30 | CHICAGO | 09/08/1981 |
| JAMES | CLERK | 30 | CHICAGO | 12/03/1981 |
| FORD | ANALYST | 20 | DALLAS | 12/03/1981 |

10. **Create a query to display the job, the salary for that job based on the department number and the total salary for that job for all the departments**.

| JOB | dept10 | dept20 | dept30 | Total |
|---|---|---|---|---|
| CLERK | - | 1900 | 950 | 2850 |
| SALESMAN | - | - | 5600 | 5600 |
| ANALYST | - | 6000 | - | 6000 |
| MANAGER | 2450 | 2975 | 2850 | 8275 |
| PRESIDENT | 5000 | - | - | 5000 |

**Solution:**

```
SELECT DISTINCT job,
SUM(Decode (deptno,10 ,sal))"Dept 10", SUM(Decode (deptno,20 ,sal))"Dept 20",
SUM(Decode (deptno,30 ,sal))"Dept 30", SUM(sal) "Total" FROM emp

GROUP BY job;
```

| JOB | Dept 10 | Dept 20 | Dept 30 | Total |
|---|---|---|---|---|
| CLERK | - | 1900 | 950 | 2850 |
| SALESMAN | - | - | 5600 | 5600 |
| ANALYST | - | 6000 | - | 6000 |
| MANAGER | 2450 | 2975 | 2850 | 8275 |
| PRESIDENT | 5000 | - | - | 5000 |