



**Fatima Jinnah Women University**

Department of Software Engineering

# LAB 7

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**Section:** A

**Semester:** Fourth

**Course:** Data Base (LAB)

## **EXAMPLES:**

### *Cartesian Product:*

```
SQL> select ename,dname from emp,dept;
```

ENAME	DNAME
SMITH	ACCOUNTING
ALLEN	ACCOUNTING
WARD	ACCOUNTING
JONES	ACCOUNTING
MARTIN	ACCOUNTING
BLAKE	ACCOUNTING
CLARK	ACCOUNTING
SCOTT	ACCOUNTING
KING	ACCOUNTING
TURNER	ACCOUNTING
ADAMS	ACCOUNTING

  

ENAME	DNAME
JAMES	ACCOUNTING
FORD	ACCOUNTING
MILLER	ACCOUNTING
SMITH	RESEARCH
ALLEN	RESEARCH
WARD	RESEARCH
JONES	RESEARCH
MARTIN	RESEARCH
BLAKE	RESEARCH
CLARK	RESEARCH
SCOTT	RESEARCH

  

ENAME	DNAME
KING	RESEARCH
TURNER	RESEARCH
ADAMS	RESEARCH
JAMES	RESEARCH
FORD	RESEARCH
MILLER	RESEARCH
SMITH	SALES
ALLEN	SALES
WARD	SALES
JONES	SALES
MARTIN	SALES

  

ENAME	DNAME
BLAKE	SALES
CLARK	SALES
SCOTT	SALES
KING	SALES
TURNER	SALES
ADAMS	SALES
JAMES	SALES
FORD	SALES
MILLER	SALES
SMITH	OPERATIONS
ALLEN	OPERATIONS

```

ENAME      DNAME
-----
WARD        OPERATIONS
JONES        OPERATIONS
MARTIN       OPERATIONS
BLAKE        OPERATIONS
CLARK        OPERATIONS
SCOTT        OPERATIONS
KING        OPERATIONS
TURNER       OPERATIONS
ADAMS        OPERATIONS
JAMES        OPERATIONS
FORD         OPERATIONS

ENAME      DNAME
-----
MILLER      OPERATIONS

56 rows selected.

```

*Equijoin:*

```

SQL> select emp.empno,emp.ename,emp.deptno,dept.deptno,dept.loc from emp, dept where emp.deptno=dept.deptno;

   EMPNO  ENAME      DEPTNO   DEPTNO LOC
-----
    7782  CLARK          10        10 NEW YORK
    7839  KING            10        10 NEW YORK
    7934  MILLER          10        10 NEW YORK
    7566  JONES           20        20 DALLAS
    7902  FORD            20        20 DALLAS
    7876  ADAMS           20        20 DALLAS
    7369  SMITH           20        20 DALLAS
    7788  SCOTT           20        20 DALLAS
    7521  WARD            30        30 CHICAGO
    7844  TURNER          30        30 CHICAGO
    7499  ALLEN           30        30 CHICAGO

   EMPNO  ENAME      DEPTNO   DEPTNO LOC
-----
    7900  JAMES           30        30 CHICAGO
    7698  BLAKE           30        30 CHICAGO
    7654  MARTIN          30        30 CHICAGO

14 rows selected.

```

```

SQL> select emp.empno,emp.ename,emp.deptno,dept.deptno,dept.loc from emp, dept where emp.deptno=dept.deptno and ename='JAMES';

   EMPNO  ENAME      DEPTNO   DEPTNO LOC
-----
    7900  JAMES           30        30 CHICAGO

```

### Using Table Alias:

```
SQL> select e.empno,e.ename,e.deptno,d.deptno,d.loc from emp e, dept d where e.deptno=d.deptno;
```

EMPNO	ENAME	DEPTNO	DEPTNO	LOC
7782	CLARK	10	10	NEW YORK
7839	KING	10	10	NEW YORK
7934	MILLER	10	10	NEW YORK
7566	JONES	20	20	DALLAS
7902	FORD	20	20	DALLAS
7876	ADAMS	20	20	DALLAS
7369	SMITH	20	20	DALLAS
7788	SCOTT	20	20	DALLAS
7521	WARD	30	30	CHICAGO
7844	TURNER	30	30	CHICAGO
7499	ALLEN	30	30	CHICAGO

  

EMPNO	ENAME	DEPTNO	DEPTNO	LOC
7900	JAMES	30	30	CHICAGO
7698	BLAKE	30	30	CHICAGO
7654	MARTIN	30	30	CHICAGO

14 rows selected.

### Non Equijoin:

```
SQL> select e.ename,e.sal,j.grade from emp e,salgrade j where e.sal between j.losal and j.hisal;
```

ENAME	SAL	GRADE
SMITH	800	1
JAMES	950	1
ADAMS	1100	1
WARD	1250	2
MARTIN	1250	2
MILLER	1300	2
TURNER	1500	3
ALLEN	1600	3
CLARK	2450	4
BLAKE	2850	4
JONES	2975	4

  

ENAME	SAL	GRADE
SCOTT	3000	4
FORD	3000	4
KING	5000	5

14 rows selected.

### *Outer Join:*

```
SQL> select e.ename,e.deptno,d.dname from emp e,dept d where e.deptno(+)=d.deptno;
```

ENAME	DEPTNO	DNAME
CLARK	10	ACCOUNTING
KING	10	ACCOUNTING
MILLER	10	ACCOUNTING
JONES	20	RESEARCH
FORD	20	RESEARCH
ADAMS	20	RESEARCH
SMITH	20	RESEARCH
SCOTT	20	RESEARCH
WARD	30	SALES
TURNER	30	SALES
ALLEN	30	SALES

  

ENAME	DEPTNO	DNAME
JAMES	30	SALES
BLAKE	30	SALES
MARTIN	30	SALES
		OPERATIONS

15 rows selected.

### *Self Join:*

```
SQL> select worker.ename || ' works for ' || manager.ename as "Employee" from emp worker,emp manager where worker.mgr=manager.empno;
```

Employee

FORD works for JONES
SCOTT works for JONES
TURNER works for BLAKE
ALLEN works for BLAKE
WARD works for BLAKE
JAMES works for BLAKE
MARTIN works for BLAKE
MILLER works for CLARK
ADAMS works for SCOTT
BLAKE works for KING
JONES works for KING

Employee

CLARK works for KING
SMITH works for FORD

13 rows selected.

### *Creating Cross Joins:*

```
SQL> select ename,dname from emp cross join dept;
```

ENAME	DNAME
SMITH	ACCOUNTING
ALLEN	ACCOUNTING
WARD	ACCOUNTING
JONES	ACCOUNTING
MARTIN	ACCOUNTING
BLAKE	ACCOUNTING
CLARK	ACCOUNTING
SCOTT	ACCOUNTING
KING	ACCOUNTING
TURNER	ACCOUNTING
ADAMS	ACCOUNTING

ENAME	DNAME
JAMES	ACCOUNTING
FORD	ACCOUNTING
MILLER	ACCOUNTING
SMITH	RESEARCH
ALLEN	RESEARCH
WARD	RESEARCH
JONES	RESEARCH
MARTIN	RESEARCH
BLAKE	RESEARCH
CLARK	RESEARCH
SCOTT	RESEARCH

ENAME	DNAME
KING	RESEARCH
TURNER	RESEARCH
ADAMS	RESEARCH
JAMES	RESEARCH
FORD	RESEARCH
MILLER	RESEARCH
SMITH	SALES
ALLEN	SALES
WARD	SALES
JONES	SALES
MARTIN	SALES

ENAME	DNAME
BLAKE	SALES
CLARK	SALES
SCOTT	SALES
KING	SALES
TURNER	SALES
ADAMS	SALES
JAMES	SALES
FORD	SALES
MILLER	SALES
SMITH	OPERATIONS
ALLEN	OPERATIONS

```

ENAME      DNAME
-----
WARD       OPERATIONS
JONES      OPERATIONS
MARTIN     OPERATIONS
BLAKE      OPERATIONS
CLARK      OPERATIONS
SCOTT      OPERATIONS
KING       OPERATIONS
TURNER     OPERATIONS
ADAMS      OPERATIONS
JAMES      OPERATIONS
FORD       OPERATIONS

ENAME      DNAME
-----
MILLER     OPERATIONS

56 rows selected.

```

### *Creating Natural Joins:*

```
SQL> select empno,ename,job,dname,loc from emp natural join dept;
```

EMPNO	ENAME	JOB	DNAME	LOC
7782	CLARK	MANAGER	ACCOUNTING	NEW YORK
7839	KING	PRESIDENT	ACCOUNTING	NEW YORK
7934	MILLER	CLERK	ACCOUNTING	NEW YORK
7566	JONES	MANAGER	RESEARCH	DALLAS
7902	FORD	ANALYST	RESEARCH	DALLAS
7876	ADAMS	CLERK	RESEARCH	DALLAS
7369	SMITH	CLERK	RESEARCH	DALLAS
7788	SCOTT	ANALYST	RESEARCH	DALLAS
7521	WARD	SALESMAN	SALES	CHICAGO
7844	TURNER	SALESMAN	SALES	CHICAGO
7499	ALLEN	SALESMAN	SALES	CHICAGO
7900	JAMES	CLERK	SALES	CHICAGO
7698	BLAKE	MANAGER	SALES	CHICAGO
7654	MARTIN	SALESMAN	SALES	CHICAGO

14 rows selected.

```
SQL> select empno,ename,job,dname,loc from emp natural join dept where deptno in (10,20);
```

EMPNO	ENAME	JOB	DNAME	LOC
7369	SMITH	CLERK	RESEARCH	DALLAS
7566	JONES	MANAGER	RESEARCH	DALLAS
7782	CLARK	MANAGER	ACCOUNTING	NEW YORK
7788	SCOTT	ANALYST	RESEARCH	DALLAS
7839	KING	PRESIDENT	ACCOUNTING	NEW YORK
7876	ADAMS	CLERK	RESEARCH	DALLAS
7902	FORD	ANALYST	RESEARCH	DALLAS
7934	MILLER	CLERK	ACCOUNTING	NEW YORK

8 rows selected.

### *Creating Joins with the USING clause:*

```
SQL> select e.empno,e.ename,d.loc from emp e join dept d using (deptno);
```

EMPNO	ENAME	LOC
7782	CLARK	NEW YORK
7839	KING	NEW YORK
7934	MILLER	NEW YORK
7566	JONES	DALLAS
7902	FORD	DALLAS
7876	ADAMS	DALLAS
7369	SMITH	DALLAS
7788	SCOTT	DALLAS
7521	WARD	CHICAGO
7844	TURNER	CHICAGO
7499	ALLEN	CHICAGO

  

EMPNO	ENAME	LOC
7900	JAMES	CHICAGO
7698	BLAKE	CHICAGO
7654	MARTIN	CHICAGO

```
14 rows selected.
```

*Creating Joins with the ON clause:*

```
SQL> select e.empno,e.ename, d.deptno, d.loc from emp e join dept d on (e.deptno=d.deptno);
```

EMPNO	ENAME	DEPTNO	LOC
7782	CLARK	10	NEW YORK
7839	KING	10	NEW YORK
7934	MILLER	10	NEW YORK
7566	JONES	20	DALLAS
7902	FORD	20	DALLAS
7876	ADAMS	20	DALLAS
7369	SMITH	20	DALLAS
7788	SCOTT	20	DALLAS
7521	WARD	30	CHICAGO
7844	TURNER	30	CHICAGO
7499	ALLEN	30	CHICAGO

  

EMPNO	ENAME	DEPTNO	LOC
7900	JAMES	30	CHICAGO
7698	BLAKE	30	CHICAGO
7654	MARTIN	30	CHICAGO

```
14 rows selected.
```

*Left Outer Join:*



```
SQL> select empno,ename,job,dname,loc from emp e left outer join dept d on (e.deptno=d.deptno);
```

EMPNO	ENAME	JOB	DNAME	LOC
7934	MILLER	CLERK	ACCOUNTING	NEW YORK
7839	KING	PRESIDENT	ACCOUNTING	NEW YORK
7782	CLARK	MANAGER	ACCOUNTING	NEW YORK
7902	FORD	ANALYST	RESEARCH	DALLAS
7876	ADAMS	CLERK	RESEARCH	DALLAS
7788	SCOTT	ANALYST	RESEARCH	DALLAS
7566	JONES	MANAGER	RESEARCH	DALLAS
7369	SMITH	CLERK	RESEARCH	DALLAS
7900	JAMES	CLERK	SALES	CHICAGO
7844	TURNER	SALESMAN	SALES	CHICAGO
7698	BLAKE	MANAGER	SALES	CHICAGO
-----				
EMPNO	ENAME	JOB	DNAME	LOC
7654	MARTIN	SALESMAN	SALES	CHICAGO
7521	WARD	SALESMAN	SALES	CHICAGO
7499	ALLEN	SALESMAN	SALES	CHICAGO

14 rows selected.

```
SQL> select empno,ename,job,dname,loc from emp e,dept d where e.deptno=d.deptno(+);
```

EMPNO	ENAME	JOB	DNAME	LOC
7934	MILLER	CLERK	ACCOUNTING	NEW YORK
7839	KING	PRESIDENT	ACCOUNTING	NEW YORK
7782	CLARK	MANAGER	ACCOUNTING	NEW YORK
7902	FORD	ANALYST	RESEARCH	DALLAS
7876	ADAMS	CLERK	RESEARCH	DALLAS
7788	SCOTT	ANALYST	RESEARCH	DALLAS
7566	JONES	MANAGER	RESEARCH	DALLAS
7369	SMITH	CLERK	RESEARCH	DALLAS
7900	JAMES	CLERK	SALES	CHICAGO
7844	TURNER	SALESMAN	SALES	CHICAGO
7698	BLAKE	MANAGER	SALES	CHICAGO
-----				
EMPNO	ENAME	JOB	DNAME	LOC
7654	MARTIN	SALESMAN	SALES	CHICAGO
7521	WARD	SALESMAN	SALES	CHICAGO
7499	ALLEN	SALESMAN	SALES	CHICAGO

14 rows selected.

## TASKS

1. Write a query to display the last name, department number, and department name for all employees.

```
SQL> select d.deptno, e.ename, d.dname from emp e, dept d;
```

DEPTNO	ENAME	DNAME
10	SMITH	ACCOUNTING
10	ALLEN	ACCOUNTING
10	WARD	ACCOUNTING
10	JONES	ACCOUNTING
10	MARTIN	ACCOUNTING
10	BLAKE	ACCOUNTING
10	CLARK	ACCOUNTING
10	SCOTT	ACCOUNTING
10	KING	ACCOUNTING
10	TURNER	ACCOUNTING
10	ADAMS	ACCOUNTING

DEPTNO	ENAME	DNAME
10	JAMES	ACCOUNTING
10	FORD	ACCOUNTING
10	MILLER	ACCOUNTING
20	SMITH	RESEARCH
20	ALLEN	RESEARCH
20	WARD	RESEARCH
20	JONES	RESEARCH
20	MARTIN	RESEARCH
20	BLAKE	RESEARCH
20	CLARK	RESEARCH
20	SCOTT	RESEARCH

DEPTNO	ENAME	DNAME
20	KING	RESEARCH
20	TURNER	RESEARCH
20	ADAMS	RESEARCH
20	JAMES	RESEARCH
20	FORD	RESEARCH
20	MILLER	RESEARCH
30	SMITH	SALES
30	ALLEN	SALES
30	WARD	SALES
30	JONES	SALES
30	MARTIN	SALES

```

DEPTNO ENAME      DNAME
-----
30 BLAKE        SALES
30 CLARK        SALES
30 SCOTT        SALES
30 KING         SALES
30 TURNER       SALES
30 ADAMS        SALES
30 JAMES        SALES
30 FORD         SALES
30 MILLER       SALES
40 SMITH        OPERATIONS
40 ALLEN        OPERATIONS

DEPTNO ENAME      DNAME
-----
40 WARD         OPERATIONS
40 JONES        OPERATIONS
40 MARTIN       OPERATIONS
40 BLAKE        OPERATIONS
40 CLARK        OPERATIONS
40 SCOTT        OPERATIONS
40 KING         OPERATIONS
40 TURNER       OPERATIONS
40 ADAMS        OPERATIONS
40 JAMES        OPERATIONS
40 FORD         OPERATIONS

DEPTNO ENAME      DNAME
-----
40 MILLER       OPERATIONS

56 rows selected.

```

2. Create a unique listing of all jobs that are in department 30. Include the location of department 40 in the output.

```

SQL> select distinct e.job, d.loc from emp e, dept d where (e.deptno=30 and d.deptno=40);

JOB      LOC
-----
SALESMAN BOSTON
CLERK    BOSTON
MANAGER  BOSTON

```

3. Write a query to display the employee name, department name and location of all employees who earn a commission.

```
SQL> select ename, dname, loc, comm from emp, dept where comm is not null;
```

ENAME	DNAME	LOC	COMM
ALLEN	ACCOUNTING	NEW YORK	300
ALLEN	RESEARCH	DALLAS	300
ALLEN	SALES	CHICAGO	300
ALLEN	OPERATIONS	BOSTON	300
WARD	ACCOUNTING	NEW YORK	500
WARD	RESEARCH	DALLAS	500
WARD	SALES	CHICAGO	500
WARD	OPERATIONS	BOSTON	500
MARTIN	ACCOUNTING	NEW YORK	1400
MARTIN	RESEARCH	DALLAS	1400
MARTIN	SALES	CHICAGO	1400

  

ENAME	DNAME	LOC	COMM
MARTIN	OPERATIONS	BOSTON	1400
TURNER	ACCOUNTING	NEW YORK	0
TURNER	RESEARCH	DALLAS	0
TURNER	SALES	CHICAGO	0
TURNER	OPERATIONS	BOSTON	0

16 rows selected.

4. Display the employee name and department name for all employees who have an 'a' in their name.

```
SQL> select ename, dname from emp, dept where ename like '%a%';
```

ENAME	DNAME
ALLEN	ACCOUNTING
ALLEN	RESEARCH
ALLEN	SALES
ALLEN	OPERATIONS
WARD	ACCOUNTING
WARD	RESEARCH
WARD	SALES
WARD	OPERATIONS
MARTIN	ACCOUNTING
MARTIN	RESEARCH
MARTIN	SALES

  

ENAME	DNAME
MARTIN	OPERATIONS
BLAKE	ACCOUNTING
BLAKE	RESEARCH
BLAKE	SALES
BLAKE	OPERATIONS
CLARK	ACCOUNTING
CLARK	RESEARCH
CLARK	SALES
CLARK	OPERATIONS
ADAMS	ACCOUNTING
ADAMS	RESEARCH

  

ENAME	DNAME
ADAMS	SALES
ADAMS	OPERATIONS
JAMES	ACCOUNTING
JAMES	RESEARCH
JAMES	SALES
JAMES	OPERATIONS

28 rows selected.

5. Write a query to display the employee name, job, department number and department name for all employees who work in 'DALLAS'.

```
SQL> select ename, job, e.deptno, dname, loc from emp e, dept where loc= 'DALLAS';
```

ENAME	JOB	DEPTNO	DNAME	LOC
SMITH	CLERK	20	RESEARCH	DALLAS
ALLEN	SALESMAN	30	RESEARCH	DALLAS
WARD	SALESMAN	30	RESEARCH	DALLAS
JONES	MANAGER	20	RESEARCH	DALLAS
MARTIN	SALESMAN	30	RESEARCH	DALLAS
BLAKE	MANAGER	30	RESEARCH	DALLAS
CLARK	MANAGER	10	RESEARCH	DALLAS
SCOTT	ANALYST	20	RESEARCH	DALLAS
KING	PRESIDENT	10	RESEARCH	DALLAS
TURNER	SALESMAN	30	RESEARCH	DALLAS
ADAMS	CLERK	20	RESEARCH	DALLAS

ENAME	JOB	DEPTNO	DNAME	LOC
JAMES	CLERK	30	RESEARCH	DALLAS
FORD	ANALYST	20	RESEARCH	DALLAS
MILLER	CLERK	10	RESEARCH	DALLAS

14 rows selected.

6. Display the employee name and employee number along with their manager name and manager number. Label the columns Employee, Emp #, Manager and Mgr # respectively.

```
SQL> select e.ename as Employee, e.empno as Emp#, m.ename as Manager, m.mgr as Mgr# from emp e, emp m where m.empno=e.mgr;
```

EMPLOYEE	EMP#	MANAGER	MGR#
FORD	7901	JONES	7839
SCOTT	7788	JONES	7839
TURNER	7844	BLAKE	7839
ALLEN	7499	BLAKE	7839
WARD	7521	BLAKE	7839
JAMES	7800	BLAKE	7839
MARTIN	7654	BLAKE	7839
MILLER	7934	CLARK	7839
ADAMS	7876	SCOTT	7566
BLAKE	7698	KING	
JONES	7566	KING	

EMPLOYEE	EMP#	MANAGER	MGR#
CLARK	7782	KING	
SMITH	7369	FORD	7566

13 rows selected.

7. Modify the above query to display all employees including King, who has no manager. Order the results by employee number.

```
SQL> select e.ename as Employee, e.empno as Emp#, m.ename as Manager , m.mgr as Mgr# from emp e, emp m where m.empno=e.mgr and m.mgr is not null;
```

EMPLOYEE	EMP#	MANAGER	MGR#
FORD	7902	JONES	7839
SCOTT	7788	JONES	7839
TURNER	7844	BLAKE	7839
ALLEN	7499	BLAKE	7839
WARD	7521	BLAKE	7839
JAMES	7900	BLAKE	7839
MARTIN	7654	BLAKE	7839
MILLER	7934	CLARK	7839
ADAMS	7876	SCOTT	7566
SMITH	7369	FORD	7566

10 rows selected.

Activate Windows

8. Create a query that displays the employee name, department number, and all the employees who work in the same department as a given employee. Given each employee an appropriate label.

```
SQL> select e.ename as employee, e.deptno, esd.ename as "Dept Fellows"  
2  from emp e join emp esd  
3  on (e.deptno=esd.deptno)  
4  where e.empno<>esd.empno;
```

EMPLOYEE	DEPTNO	Dept Fello
FORD	20	SMITH
ADAMS	20	SMITH
SCOTT	20	SMITH
JONES	20	SMITH
JAMES	30	ALLEN
TURNER	30	ALLEN
BLAKE	30	ALLEN
MARTIN	30	ALLEN
WARD	30	ALLEN
JAMES	30	WARD
TURNER	30	WARD

EMPLOYEE	DEPTNO	Dept Fello
BLAKE	30	WARD
MARTIN	30	WARD
ALLEN	30	WARD
FORD	20	JONES
ADAMS	20	JONES
SCOTT	20	JONES
SMITH	20	JONES
JAMES	30	MARTIN
TURNER	30	MARTIN
BLAKE	30	MARTIN
WARD	30	MARTIN

EMPLOYEE	DEPTNO	Dept Fello
ALLEN	30	MARTIN
JAMES	30	BLAKE
TURNER	30	BLAKE
MARTIN	30	BLAKE
WARD	30	BLAKE
ALLEN	30	BLAKE
MILLER	10	CLARK
KING	10	CLARK
FORD	20	SCOTT

```

EMPLOYEE      DEPTNO Dept Fello
-----
SMITH          20 SCOTT
MILLER         10 KING
CLARK          10 KING
JAMES          30 TURNER
BLAKE          30 TURNER
MARTIN         30 TURNER
WARD           30 TURNER
ALLEN          30 TURNER
FORD           20 ADAMS
SCOTT          20 ADAMS
JONES          20 ADAMS

EMPLOYEE      DEPTNO Dept Fello
-----
SMITH          20 ADAMS
TURNER         30 JAMES
BLAKE          30 JAMES
MARTIN         30 JAMES
WARD           30 JAMES
ALLEN          30 JAMES
ADAMS          20 FORD
SCOTT          20 FORD
JONES          20 FORD
SMITH          20 FORD
KING           10 MILLER

EMPLOYEE      DEPTNO Dept Fello
-----
CLARK          10 MILLER

56 rows selected.

```