PRACTICAL NO. 5

1. **INNER JOIN:** The INNER JOIN keyword selects all rows from both the tables as long as the satisfies.

SYNTAX:

SELECT table1.column1,table1.column2,table2.column1,….

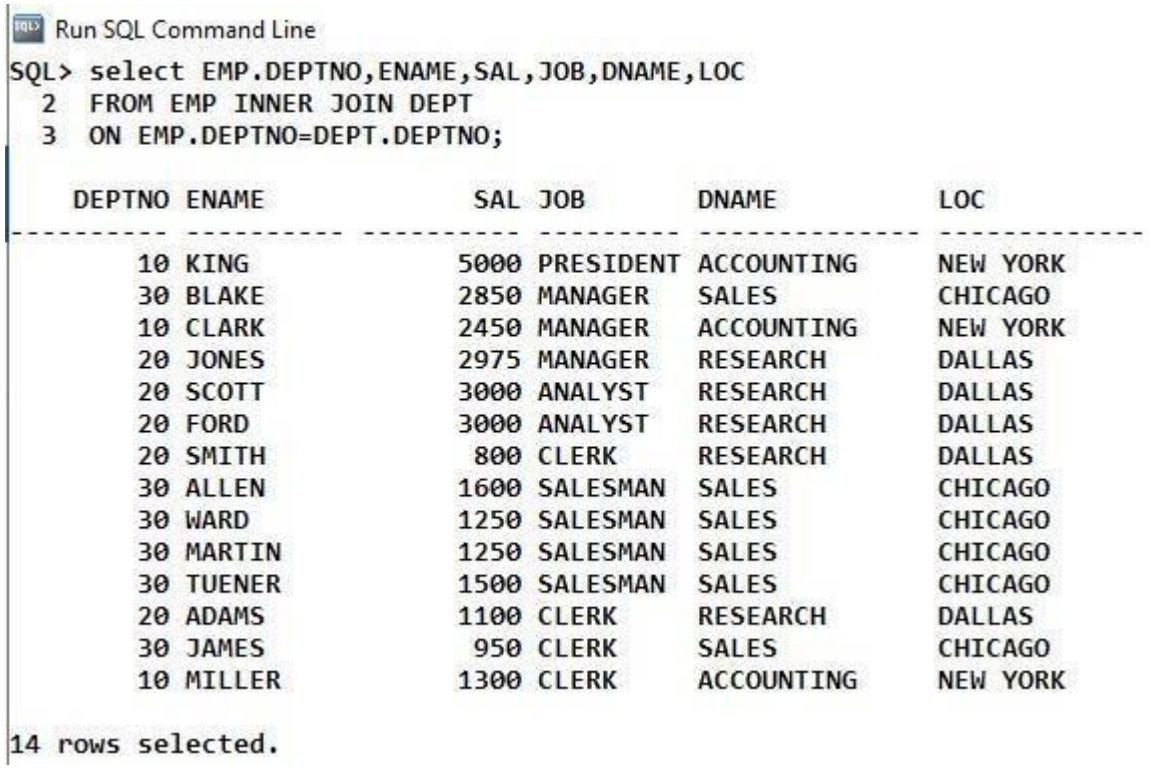
FROM table1 INNER JOIN table2

ON table1.matching_column=table2.matching_column; Example:

SELECT EMP.DEPTNO,ENAME, SAL,JOB,DNAME,LOC

FROM EMP INNER JOIN DEPT

ON EMP.DEPTNO=DEPT.DEPTNO;



```
Run SQL Command Line
SQL> select EMP.DEPTNO,ENAME,SAL,JOB,DNAME,LOC
  2  FROM EMP INNER JOIN DEPT
  3  ON EMP.DEPTNO=DEPT.DEPTNO;

    DEPTNO ENAME              SAL JOB       DNAME          LOC
---------- ---------- ---------- --------- -------------- -------------
        10 KING             5000 PRESIDENT ACCOUNTING     NEW YORK
        30 BLAKE            2850 MANAGER   SALES          CHICAGO
        10 CLARK            2450 MANAGER   ACCOUNTING     NEW YORK
        20 JONES            2975 MANAGER   RESEARCH       DALLAS
        20 SCOTT            3000 ANALYST   RESEARCH       DALLAS
        20 FORD             3000 ANALYST   RESEARCH       DALLAS
        20 SMITH             800 CLERK     RESEARCH       DALLAS
        30 ALLEN            1600 SALESMAN  SALES          CHICAGO
        30 WARD             1250 SALESMAN  SALES          CHICAGO
        30 MARTIN           1250 SALESMAN  SALES          CHICAGO
        30 TUENER           1500 SALESMAN  SALES          CHICAGO
        20 ADAMS            1100 CLERK     RESEARCH       DALLAS
        30 JAMES             950 CLERK     SALES          CHICAGO
        10 MILLER           1300 CLERK     ACCOUNTING     NEW YORK

14 rows selected.
```

2. **NATURAL JOIN:** A Natural Join is a type equi join which occurs implicitly by comparing all the same names columns in both tables. The join result has only one column for each pair of equally named columns

SYNTAX:

select * From table1 natural join table2;

Example:

Select * from EMP natural join DEPT;

```
SQL> Select * from EMP natural join DEPT;

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

14 rows selected.
```

3. OUTER JOIN:

Theta Join, Equijoin, and Natural Join are called inner joins. An inner join includes only those tuples with matching attributes and the rest are discarded in the resulting relation. Therefore, we need to use outer joins to include all the tuples from the participating relations in the resulting relation. There are three kinds of outer joins − left outer join, right outer join, and full outer join.

A) RIGHT OUTER JOIN:

SYNTAX:

SELECT table1.column1, table2.column2....

FROM table1

RIGHT JOIN table2

ON table1.column_field = table2.column_field;

EXAMPLE:

SELECT EMPNO,ENAMESAL,EMP.DEPTNO,DEPT.DEPTNO,DNAME

FROM DEPT RIGHT OUTER JOIN EMP

ON EMP.DEPTNO=DEPT.DEPTNO;

Run SQL Command Line

```
SQL> select EMPNO,ENAME,SAL,EMP.DEPTNO,DEPT.DEPTNO,DNAME
  2  FROM DEPT RIGHT OUTER JOIN EMP
  3  ON EMP.DEPTNO=DEPT.DEPTNO;

     EMPNO ENAME             SAL     DEPTNO     DEPTNO DNAME
---------- ---------- ---------- ---------- ---------- --------------
      7839 KING             5000         10         10 ACCOUNTING
      7698 BLAKE            2850         30         30 SALES
      7782 CLARK            2450         10         10 ACCOUNTING
      7566 JONES            2975         20         20 RESEARCH
      7788 SCOTT            3000         20         20 RESEARCH
      7902 FORD             3000         20         20 RESEARCH
      7369 SMITH             800         20         20 RESEARCH
      7499 ALLEN            1600         30         30 SALES
      7521 WARD             1250         30         30 SALES
      7654 MARTIN           1250         30         30 SALES
      7844 TUENER           1500         30         30 SALES
      7876 ADAMS            1100         20         20 RESEARCH
      7900 JAMES             950         30         30 SALES
      7934 MILLER           1300         10         10 ACCOUNTING

14 rows selected.
```

B) LEFT OUTER JOIN :

SYNTAX:

SELECT table1.column1, table2.column2....

FROM table1

LEFT JOIN table2

ON table1.column_field = table2.column_field;

EXAMPLE:

SELECT EMPNO,ENAME,SAL,EMP.DEPTNO,DEPT.DEPTNO,DNAME

FROM DEPT LEFT OUTER JOIN EMP

ON EMP.DEPTNO=DEPT.DEPTNO;

Run SQL Command Line

```
SQL> SELECT EMPNO,ENAME,SAL,EMP.DEPTNO,DEPT.DEPTNO,DNAME
  2  FROM DEPT LEFT OUTER JOIN EMP
  3  ON EMP.DEPTNO=DEPT.DEPTNO;

     EMPNO ENAME             SAL     DEPTNO     DEPTNO DNAME
---------- ---------- ---------- ---------- ---------- --------------
      7839 KING             5000         10         10 ACCOUNTING
      7698 BLAKE            2850         30         30 SALES
      7782 CLARK            2450         10         10 ACCOUNTING
      7566 JONES            2975         20         20 RESEARCH
      7788 SCOTT            3000         20         20 RESEARCH
      7902 FORD             3000         20         20 RESEARCH
      7369 SMITH             800         20         20 RESEARCH
      7499 ALLEN            1600         30         30 SALES
      7521 WARD             1250         30         30 SALES
      7654 MARTIN           1250         30         30 SALES
      7844 TUENER           1500         30         30 SALES
      7876 ADAMS            1100         20         20 RESEARCH
      7900 JAMES             950         30         30 SALES
      7934 MILLER           1300         10         10 ACCOUNTING
                                                      40 OPERATIONS

15 rows selected.
```

C) FULL OUTER JOIN:

SYNTAX:

SELECT table1.column1, table2.column2....

FROM table1

FULL JOIN table2

ON table1.column_field = table2.column_field;

EXAMPLE:

SELECT EMPNO,ENAME,SAL,EMP.DEPTNO,DEPT.DEPTNO,DNAME

FROM DEPT FULL OUTER JOIN EMP

ON EMP.DEPTNO=DEPT.DEPTNO;

```
SQL> SELECT EMPNO,ENAME,SAL,EMP.DEPTNO,DEPT.DEPTNO,DNAME
  2  FROM DEPT FULL OUTER JOIN EMP
  3  ON EMP.DEPTNO=DEPT.DEPTNO;

     EMPNO ENAME             SAL     DEPTNO     DEPTNO DNAME
---------- ---------- ---------- ---------- ---------- --------------
      7839 KING             5000         10         10 ACCOUNTING
      7698 BLAKE            2850         30         30 SALES
      7782 CLARK            2450         10         10 ACCOUNTING
      7566 JONES            2975         20         20 RESEARCH
      7788 SCOTT            3000         20         20 RESEARCH
      7902 FORD             3000         20         20 RESEARCH
      7369 SMITH             800         20         20 RESEARCH
      7499 ALLEN            1600         30         30 SALES
      7521 WARD             1250         30         30 SALES
      7654 MARTIN           1250         30         30 SALES
      7844 TUENER           1500         30         30 SALES
      7876 ADAMS            1100         20         20 RESEARCH
      7900 JAMES             950         30         30 SALES
      7934 MILLER           1300         10         10 ACCOUNTING
                                                    40 OPERATIONS

15 rows selected.
```

4. **CROSS JOIN:** When each row of first table is combined with each row from the second table, known as Cartesian join or cross join.

SYNTAX:

SELECT * FROM TABLE1 CROSS JOIN TABLE2

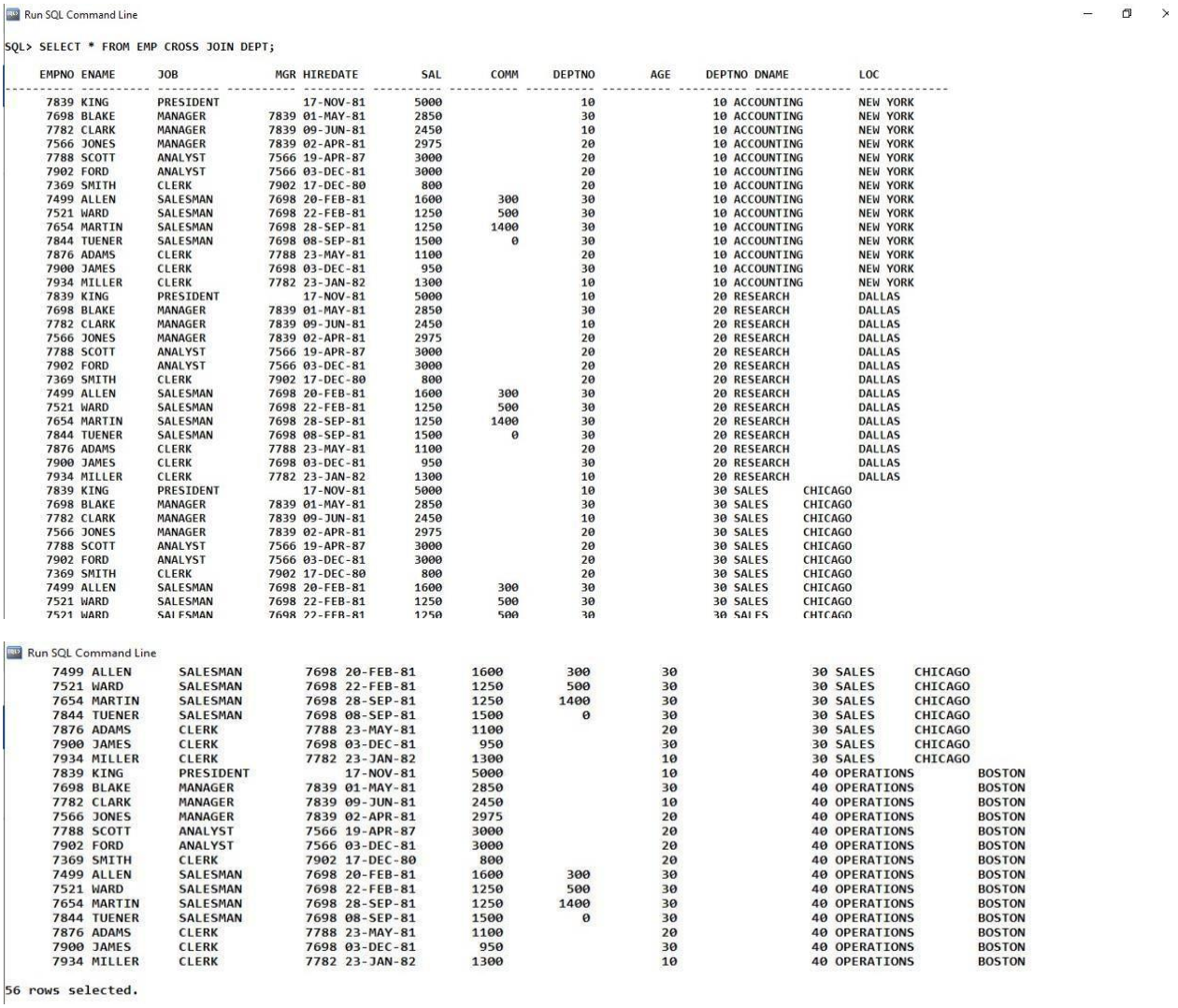
OR

SELECT * FROM TABLE1 , TABLE2 EXAMPLE:

SELECT * FROM EMP CROSS JOIN DEPT;

OR

SELECT * FROM EMP, DEPT



```
Run SQL Command Line

SQL> SELECT * FROM EMP CROSS JOIN DEPT;

     EMPNO ENAME      JOB              MGR HIREDATE         SAL       COMM     DEPTNO        AGE     DEPTNO DNAME          LOC
---------- ---------- --------- ---------- --------- ---------- ---------- ---------- ---------- ---------- -------------- -------------
      7839 KING       PRESIDENT           17-NOV-81       5000                    10                 10 ACCOUNTING     NEW YORK
      7698 BLAKE      MANAGER        7839 01-MAY-81       2850                    30                 10 ACCOUNTING     NEW YORK
      7782 CLARK      MANAGER        7839 09-JUN-81       2450                    10                 10 ACCOUNTING     NEW YORK
      7566 JONES      MANAGER        7839 02-APR-81       2975                    20                 10 ACCOUNTING     NEW YORK
      7788 SCOTT      ANALYST        7566 19-APR-87       3000                    20                 10 ACCOUNTING     NEW YORK
      7902 FORD       ANALYST        7566 03-DEC-81       3000                    20                 10 ACCOUNTING     NEW YORK
      7369 SMITH      CLERK          7902 17-DEC-80        800                    20                 10 ACCOUNTING     NEW YORK
      7499 ALLEN      SALESMAN       7698 20-FEB-81       1600        300         30                 10 ACCOUNTING     NEW YORK
      7521 WARD       SALESMAN       7698 22-FEB-81       1250        500         30                 10 ACCOUNTING     NEW YORK
      7654 MARTIN     SALESMAN       7698 28-SEP-81       1250       1400         30                 10 ACCOUNTING     NEW YORK
      7844 TUENER     SALESMAN       7698 08-SEP-81       1500          0         30                 10 ACCOUNTING     NEW YORK
      7876 ADAMS      CLERK          7788 23-MAY-81       1100                    20                 10 ACCOUNTING     NEW YORK
      7900 JAMES      CLERK          7698 03-DEC-81        950                    30                 10 ACCOUNTING     NEW YORK
      7934 MILLER     CLERK          7782 23-JAN-82       1300                    10                 10 ACCOUNTING     NEW YORK
      7839 KING       PRESIDENT           17-NOV-81       5000                    10                 20 RESEARCH       DALLAS
      7698 BLAKE      MANAGER        7839 01-MAY-81       2850                    30                 20 RESEARCH       DALLAS
      7782 CLARK      MANAGER        7839 09-JUN-81       2450                    10                 20 RESEARCH       DALLAS
      7566 JONES      MANAGER        7839 02-APR-81       2975                    20                 20 RESEARCH       DALLAS
      7788 SCOTT      ANALYST        7566 19-APR-87       3000                    20                 20 RESEARCH       DALLAS
      7902 FORD       ANALYST        7566 03-DEC-81       3000                    20                 20 RESEARCH       DALLAS
      7369 SMITH      CLERK          7902 17-DEC-80        800                    20                 20 RESEARCH       DALLAS
      7499 ALLEN      SALESMAN       7698 20-FEB-81       1600        300         30                 20 RESEARCH       DALLAS
      7521 WARD       SALESMAN       7698 22-FEB-81       1250        500         30                 20 RESEARCH       DALLAS
      7654 MARTIN     SALESMAN       7698 28-SEP-81       1250       1400         30                 20 RESEARCH       DALLAS
      7844 TUENER     SALESMAN       7698 08-SEP-81       1500          0         30                 20 RESEARCH       DALLAS
      7876 ADAMS      CLERK          7788 23-MAY-81       1100                    20                 20 RESEARCH       DALLAS
      7900 JAMES      CLERK          7698 03-DEC-81        950                    30                 20 RESEARCH       DALLAS
      7934 MILLER     CLERK          7782 23-JAN-82       1300                    10                 20 RESEARCH       DALLAS
      7839 KING       PRESIDENT           17-NOV-81       5000                    10                 30 SALES      CHICAGO
      7698 BLAKE      MANAGER        7839 01-MAY-81       2850                    30                 30 SALES      CHICAGO
      7782 CLARK      MANAGER        7839 09-JUN-81       2450                    10                 30 SALES      CHICAGO
      7566 JONES      MANAGER        7839 02-APR-81       2975                    20                 30 SALES      CHICAGO
      7788 SCOTT      ANALYST        7566 19-APR-87       3000                    20                 30 SALES      CHICAGO
      7902 FORD       ANALYST        7566 03-DEC-81       3000                    20                 30 SALES      CHICAGO
      7369 SMITH      CLERK          7902 17-DEC-80        800                    20                 30 SALES      CHICAGO
      7499 ALLEN      SALESMAN       7698 20-FEB-81       1600        300         30                 30 SALES      CHICAGO
      7521 WARD       SALESMAN       7698 22-FEB-81       1250        500         30                 30 SALES      CHICAGO
      7654 MARTIN     SALESMAN       7698 28-SEP-81       1250       1400         30                 30 SALES      CHICAGO
      7844 TUENER     SALESMAN       7698 08-SEP-81       1500          0         30                 30 SALES      CHICAGO
      7876 ADAMS      CLERK          7788 23-MAY-81       1100                    20                 30 SALES      CHICAGO
      7900 JAMES      CLERK          7698 03-DEC-81        950                    30                 30 SALES      CHICAGO
      7934 MILLER     CLERK          7782 23-JAN-82       1300                    10                 30 SALES      CHICAGO
      7839 KING       PRESIDENT           17-NOV-81       5000                    10                 40 OPERATIONS BOSTON
      7698 BLAKE      MANAGER        7839 01-MAY-81       2850                    30                 40 OPERATIONS BOSTON
      7782 CLARK      MANAGER        7839 09-JUN-81       2450                    10                 40 OPERATIONS BOSTON
      7566 JONES      MANAGER        7839 02-APR-81       2975                    20                 40 OPERATIONS BOSTON
      7788 SCOTT      ANALYST        7566 19-APR-87       3000                    20                 40 OPERATIONS BOSTON
      7902 FORD       ANALYST        7566 03-DEC-81       3000                    20                 40 OPERATIONS BOSTON
      7369 SMITH      CLERK          7902 17-DEC-80        800                    20                 40 OPERATIONS BOSTON
      7499 ALLEN      SALESMAN       7698 20-FEB-81       1600        300         30                 40 OPERATIONS BOSTON
      7521 WARD       SALESMAN       7698 22-FEB-81       1250        500         30                 40 OPERATIONS BOSTON
      7654 MARTIN     SALESMAN       7698 28-SEP-81       1250       1400         30                 40 OPERATIONS BOSTON
      7844 TUENER     SALESMAN       7698 08-SEP-81       1500          0         30                 40 OPERATIONS BOSTON
      7876 ADAMS      CLERK          7788 23-MAY-81       1100                    20                 40 OPERATIONS BOSTON
      7900 JAMES      CLERK          7698 03-DEC-81        950                    30                 40 OPERATIONS BOSTON
      7934 MILLER     CLERK          7782 23-JAN-82       1300                    10                 40 OPERATIONS BOSTON

56 rows selected.
```

5. **SELF JOIN:** The SQL **SELF JOIN** is used to join a table to itself as if the table were two tables; temporarily renaming at least one table in the SQL statement.

SYNTAX:

```
SELECT a.column_name, b.column_name

FROM table1 a, table1 b

WHERE a.common_field = b.common_field; EXAMPLE:

SELECT a.ENAME, b.ENAME

FROM EMP a, EMP BWHERE a.EMPNO = b.DEPTNO;
```

```
SQL> SELECT b.ENAME EMPLOYEE, a.ENAME MANAGER
  2  FROM EMP a, EMP b
  3  WHERE a.EMPNO=b.MGR;

EMPLOYEE   MANAGER
---------- ----------
JONES      KING
CLARK      KING
BLAKE      KING
JAMES      BLAKE
TUENER     BLAKE
MARTIN     BLAKE
WARD       BLAKE
ALLEN      BLAKE
MILLER     CLARK
FORD       JONES
SCOTT      JONES
ADAMS      SCOTT
SMITH      FORD

13 rows selected.
```