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JOINS

INNER:

- The INNER JOIN keyword selects all rows from both the tables as long as the condition satisfies.

- SYNTAX SELECT table1.column1,table1.column2,table2.column1,.... FROM table1 INNER JOIN table2 ON table1.matching_column = table2.matching_column;

```
SQL> select Ename,SAL,Job,Dname,Loc
  2  from akshat_EMP inner join akshat_Dept
  3  on akshat_EMP.Dept_no=akshat_Dept.Dept_no;

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

14 rows selected.
```

NATURAL:

• A natural join is a type of 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;

```
SQL> select * from akshat_EMP natural join akshat_Dept;

   DEPT_NO     EMP_NO ENAME      JOB              MGR HIREDATE         SAL       COMM 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 TURNER     SALESMAN        7698 08-SEP-81       1500          0 SALES          CHICAGO
        20       7876 ADAMS      CLERK           7788 23-MAY-87       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.
```

OUTER:

• In an outer join, unmatched rows in one or both tables can be returned. Right: returns only unmatched rows from the right table

• SYNTAX SELECT table1.column1,table1.column2,table2.column1,…. FROM table1 RIGHT [OUTER] JOIN table2 ON table1.matching_column = table2.matching_column;

```
SQL> select EMP_no,Ename,SAL,akshat_EMP.Dept_no,akshat_Dept.Dept_no,Dname
  2  from akshat_EMP right outer join akshat_Dept
  3  on akshat_EMP.Dept_no=akshat_Dept.Dept_no;

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

15 rows selected.
```

Left: returns only unmatched rows from the left table.

- SYNTAX SELECT table1.column1,table1.column2,table2.column1,.... FROM table1 LEFT [OUTER] JOIN table2 ON table1.matching_column = table2.matching_column;

```
SQL> select EMP_no,Ename,SAL,akshat_EMP.Dept_no,akshat_Dept.Dept_no,Dname
  2  from akshat_EMP left outer join akshat_Dept
  3  on akshat_EMP.Dept_no=akshat_Dept.Dept_no;

    EMP_NO ENAME             SAL    DEPT_NO    DEPT_NO 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 TURNER           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.
```

Full: returns unmatched rows from both tables

- SYNTAX SELECT table1.column1,table1.column2,table2.column1,.... FROM table1 FULL [OUTER] JOIN table2 ON table1.matching_column = table2.matching_column;

```
SQL> select EMP_no,Ename,SAL,akshat_EMP.Dept_no,akshat_Dept.Dept_no,Dname
  2  from akshat_EMP full outer join akshat_Dept
  3  on akshat_EMP.Dept_no=akshat_Dept.Dept_no;

    EMP_NO ENAME             SAL    DEPT_NO    DEPT_NO 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 TURNER           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.
```

CROSS:

- The CARTESIAN JOIN is also known as CROSS JOIN.

- In a CARTESIAN JOIN there is a join for each row of one table to every row of another table. This usually happens when the matching column or WHERE condition is not specified.

- SYNTAX SELECT * FROM TABLE1,TABLE2;

```
SQL> select * from akshat_EMP,akshat_Dept;

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

56 rows selected.
```

SELF:

- As the name signifies, in SELF JOIN a table is joined to itself. That is, each row of the table is joined with itself and all other rows depending on some conditions

• SYNTAX SELECT a.column 1 , b.column2 FROM table_name a, table_name b WHERE some_condition;

```
SQL> select e2.ename employee,e1.ename manager
  2  from akshat_EMP e1,akshat_EMP e2
  3  where e1.EMP_no=e2.mgr;

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

13 rows selected.
```