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Practical 5
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> set linesize 10000
SQL> set pagesize 10000
SQL> select Ename, SAL,Job,Dname,Loc
  2  from surabhii_EMP inner join surabhi_DEPT
  3  on surabhii_EMP.Dept_no=surabhi_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 surabhii_EMP natural join surabhi_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,surabhii_EMP.Dept_no,surabhi_DEPT.Dept_no,Dname
  2  from surabhii_EMP right outer join surabhi_DEPT
  3  on surabhii_EMP.Dept_no=surabhi_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.
```

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,surabhii_EMP.Dept_no,surabhi_DEPT.Dept_no,Dname
  2  from surabhii_EMP left outer join surabhi_DEPT
  3  on surabhii_EMP.Dept_no=surabhi_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,surabhii_EMP.Dept_no,surabhi_DEPT.Dept_no,Dname
  2  from surabhii_EMP full outer join surabhi_DEPT
  3  on surabhii_EMP.Dept_no=surabhi_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 surabhii_EMP, surabhi_DEPT;

    EMP_NO ENAME      JOB          MGR HIREDATE      SAL       COMM    DEPT_NO    DEPT_NO 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 TURNER     SALESMAN      7698 08-SEP-81  1500          0           30         10 ACCOUNTING     NEW YORK
      7876 ADAMS      CLERK         7788 23-MAY-87  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 TURNER     SALESMAN      7698 08-SEP-81  1500          0           30         20 RESEARCH DALLAS
```

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 emplyoee, e1.ename manager
  2  from surabhii_EMP e1, surabhii_EMP e2
  3  where e1.Emp_no = e2.mgr;

EMPLYOEE    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.
```