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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 named 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

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;

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;

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

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.
```