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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.