SQL JOINS

What is SQL Join?

❖ JOIN clause combines rows from two or more tables.

❖ A JOIN is a means for combining fields from two or more tables by using values common of each table.

List of SQL JOINS

- ❖ Cross Join
- ❖ Inner Join
- ❖ Natural Join
- ❖ Self Join
- ❖ Left Outer Join
- ❖ Right Outer Join
- ❖ Full Outer Join

CROSS JOIN

★ *The SQL CROSS JOIN produces a result set which is the number of rows in the first table multiplied by the number of rows in the second table, if no WHERE clause is used along with CROSS JOIN.*

★ *This kind of result is called as Cartesian Product.*

★ *If, WHERE clause is used with CROSS JOIN, it functions like an INNER JOIN.*

Example : CROSS JOIN
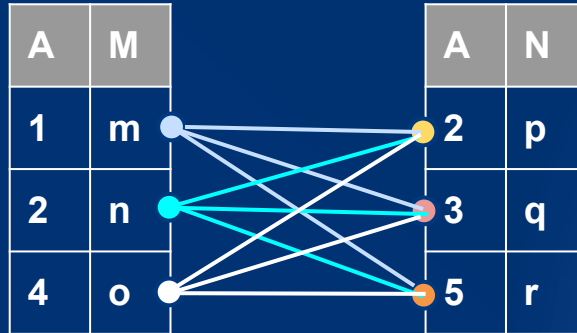
table_A

A	M
1	m
2	n
4	o

table_B

A	N
2	p
3	q
5	r

SELECT *
FROM table_A
CROSS JOIN table_B;

Output

A	M	A	N
1	m	2	p
2	n	2	p
4	o	2	p
1	m	3	q
2	n	3	q
4	o	3	q
1	m	5	r
2	n	5	r
4	o	5	r

INNER JOIN

★ *The INNER JOIN selects all rows from both participating tables as long as there is a match between the columns.*

★ *An SQL INNER JOIN is same as JOIN clause, combining rows from two or more tables.*

Example : INNER JOIN

A	M
1	m
2	n
4	o

table_A

SELECT * FROM table_A
INNER JOIN table_B
ON table_A.A=table_B.A;

A	N
2	p
3	q
5	r

table_B

A	M	A	N
2	n	2	p

Output

(2, n)
(2, p)
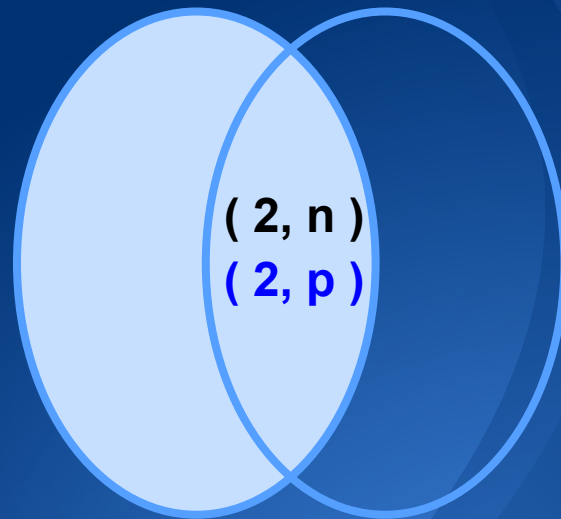
table_A   table_B

NATURAL JOIN

★ *The SQL NATURAL JOIN is a type of EQUI JOIN and is structured in such a way that, columns with same name of associate tables will appear once only.*

★ *The associated tables have one or more pairs of identically named columns.*

★ *The columns must be the same data type.*

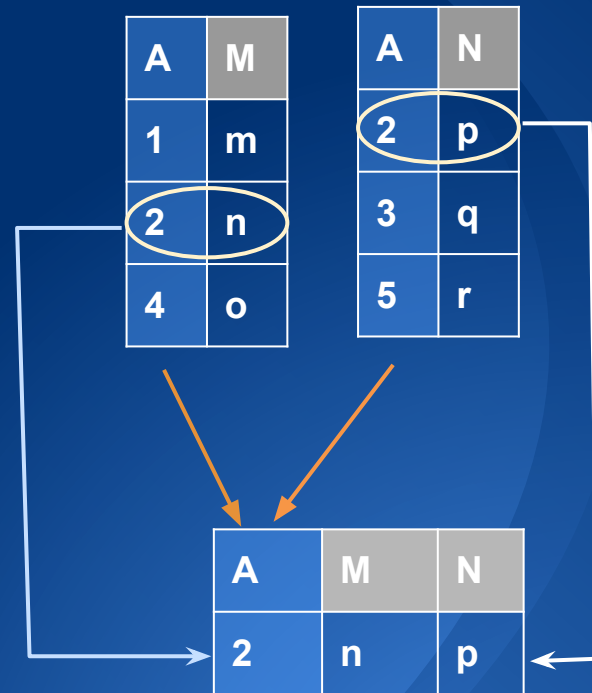★ *Don't use ON clause in a natural join.*

Example : NATURAL JOIN

table_A

A	M
1	m
2	n
4	o

table_B

A	N
2	p
3	q
5	r

SELECT *
FROM table_A
NATURAL JOIN table_B;

A	M
1	m
2	n
4	o

A	N
2	p
3	q
5	r

A	M	N
2	n	p

Output

SELF JOIN

★ *A self join is a join in which a table is joined with itself (Unary relationships), specially when the table has a FOREIGN KEY which references its own PRIMARY KEY.*

★ *To join a table itself means that each row of the table is combined with itself and with every other row of the table.*

★ *The self join can be viewed as a join of two copies of the same table.*

Example : SELF JOIN

A	M
1	m
2	n
4	o

table_A

A	M
1	m
2	n
4	o

table_A

SELECT *
FROM table_A X, table_A Y
WHERE X.A=Y.A;

A	M	A	M
1	m	1	m
2	n	2	n
4	o	4	o

Output

LEFT JOIN or LEFT OUTER JOIN

★ *The SQL LEFT JOIN, joins two tables and fetches rows based on a condition, which are matching in both the tables.*

★ *The unmatched rows will also be available from the table before the JOIN clause.*

Example : LEFT JOIN or LEFT OUTER JOIN

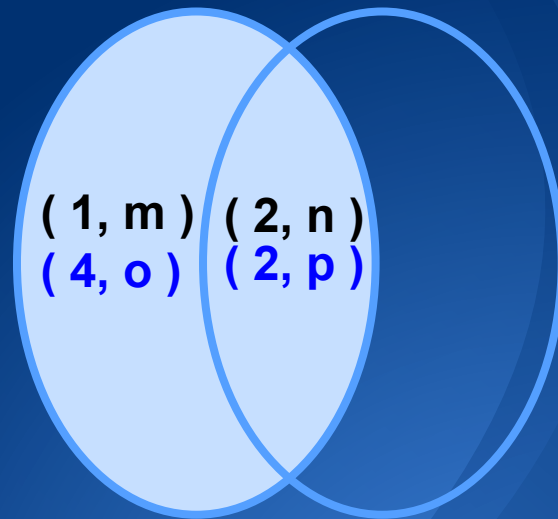| A	M
1	m
2	n
4	o

table_A

A	N
2	p
3	q
5	r

table_B

```
SELECT * FROM table_A
LEFT JOIN table_B
ON table_A.A=table_B.A;
```

A	M	A	N
2	n	2	p
1	m	null	null
4	o	null	null

Output

(1, m) (2, n)
(4, o) (2, p)

table_A   table_B

RIGHT JOIN or RIGHT OUTER JOIN

★   *The SQL RIGHT JOIN, joins two tables and fetches rows based on a condition, which are matching in both the tables.*

★   *The unmatched rows will also be available from the table written after the JOIN clause.*

Example : RIGHT JOIN or RIGHT OUTER JOIN

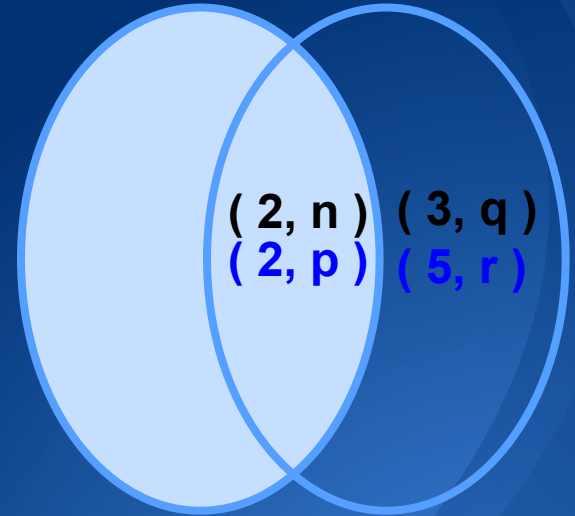| A	M
1	m
2	n
4	o

table_A

A	N
2	p
3	q
5	r

table_B

SELECT * FROM table_A
RIGHT JOIN table_B
ON table_A.A=table_B.A;

A	M	A	N
2	n	2	p
null	null	3	q
null	null	5	r

Output

(2, n) (3, q)
(2, p) (5, r)

table_A   table_B

FULL OUTER JOIN

★ *In SQL the FULL OUTER JOIN combines the results of both left and right outer joins and returns all (matched or unmatched) rows from the tables on both sides of the join clause.*

Example : FULL OUTER JOIN

A	M
1	m
2	n
4	o

table_A

A	N
2	p
3	q
5	r

table_B

SELECT * FROM table_A
FULL OUTER JOIN table_B
ON table_A.A=table_B.A;

A	M	A	N
2	n	2	p
1	m	null	null
4	o	null	null
null	null	3	q
null	null	5	r

Output

(1, m) (2, n) (3, q)
(4, o) (2, p) (5, r)

table_A   table_B