Join Operations:

A Join operation combines related tuples from different relations, if and only if a given join condition is satisfied. It is denoted by ⋈.

Example:

EMPLOYEE

EMP_CODE	EMP_NAME
101	Stephan
102	Jack
103	Harry

SALARY

EMP_CODE	SALARY
101	50000
102	30000
103	25000

Operation: (EMPLOYEE ⋈ SALARY)

Result:

EMP_CODE	EMP_NAME	SALARY

101	Stephan	50000
102	Jack	30000
103	Harry	25000

Types of Join operations:

Join Operation

Natural Join Outer Join Equi Join

— Left Outer Join

— Right Outer Join

— Full Outer Join
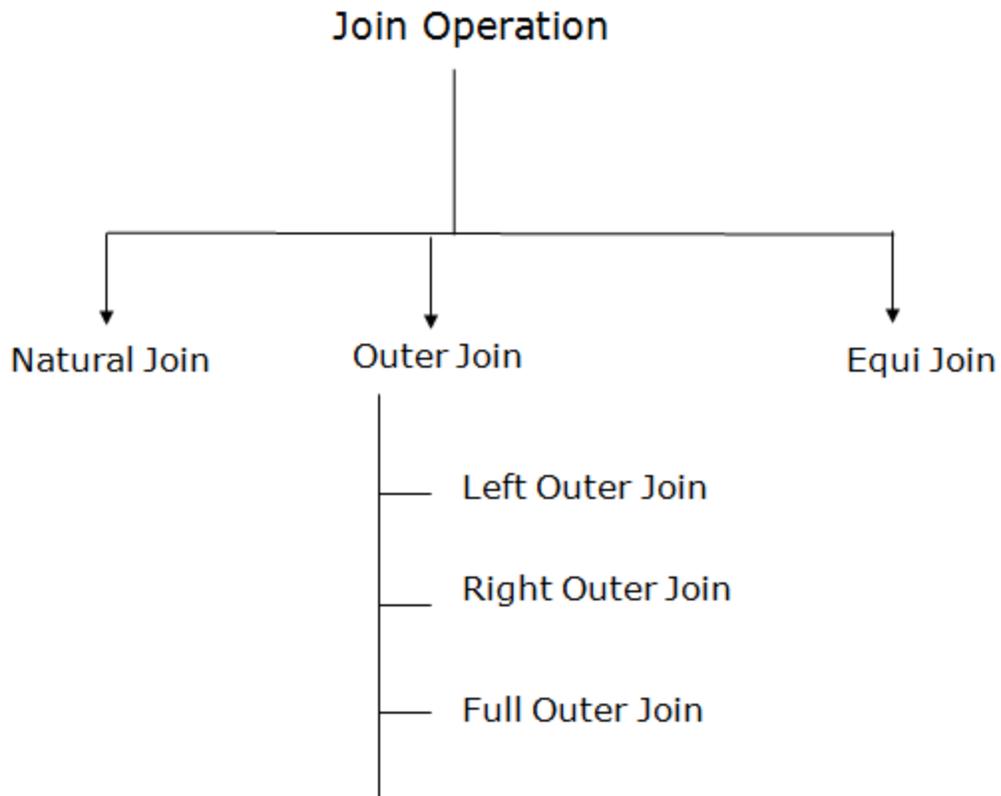
1. Natural Join:

o   A natural join is the set of tuples of all combinations in R and S that are equal on their common attribute names.

o   It is denoted by ⋈.

Example: Let's use the above EMPLOYEE table and SALARY table:

Input:

∏EMP_NAME, SALARY (EMPLOYEE ⋈ SALARY)

Output:

EMP_NAME	SALARY
Stephan	50000
Jack	30000
Harry	25000

2. Outer Join:

The outer join operation is an extension of the join operation. It is used to deal with missing information.

Example:

EMPLOYEE

EMP_NAME	STREET	CITY
Ram	Civil line	Mumbai
Shyam	Park street	Kolkata
Ravi	M.G. Street	Delhi
Hari	Nehru nagar	Hyderabad

FACT_WORKERS

EMP_NAME	BRANCH	SALARY
Ram	Infosys	10000
Shyam	Wipro	20000
Kuber	HCL	30000
Hari	TCS	50000

Input:

(EMPLOYEE ⋈ FACT_WORKERS)

Output:

EMP_NAME	STREET	CITY	BRANCH	SALARY
Ram	Civil line	Mumbai	Infosys	10000
Shyam	Park street	Kolkata	Wipro	20000
Hari	Nehru nag	Hyderabad	TCS	50000

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An outer join is basically of three types:

a. Left outer join

b. Right outer join

c. Full outer join

a. Left outer join:

o   Left outer join contains the set of tuples of all combinations in R and S that are equal on their common attribute names.

o   In the left outer join, tuples in R have no matching tuples in S.

o   It is denoted by ⋈.

Example: Using the above EMPLOYEE table and FACT_WORKERS table

Input:

1.   EMPLOYEE ⋈ FACT_WORKERS

EMP_NAME	STREET	CITY	BRANCH	SALARY
Ram	Civil line	Mumbai	Infosys	10000
Shyam	Park street	Kolkata	Wipro	20000
Hari	Nehru	Hyderab	TCS	500

	stre et	ad		00
Ravi	M.G. Stre et	Delhi	NULL	NUL L

b. Right outer join:

o Right outer join contains the set of tuples of all combinations in R and S that are equal on their common attribute names.

o In right outer join, tuples in S have no matching tuples in R.

o It is denoted by ⋈.

Example: Using the above EMPLOYEE table and FACT_WORKERS Relation

Input:

EMPLOYEE ⋈ FACT_WORKERS

Output:

EMP_NA ME	BRANC H	SALAR Y	STREE T	CITY
Ram	Infos ys	100 00	Civil line	Mumbai
Shyam	Wipr o	200 00	Park stre et	Kolkata
Hari	TCS	500	Neh	Hyderab

		00	ru stre et	ad
Kuber	HCL	300 00	NUL L	NULL

c. Full outer join:

- o Full outer join is like a left or right join except that it contains all rows from both tables.
- o In full outer join, tuples in R that have no matching tuples in S and tuples in S that have no matching tuples in R in their common attribute name.
- o It is denoted by ⋈.

Example: Using the above EMPLOYEE table and FACT_WORKERS table

Input:

EMPLOYEE ⋈ FACT_WORKERS

Output:

EMP_NA ME	STREE T	CITY	BRANC H	SALAR Y
Ram	Civil line	Mumbai	Infos ys	100 00
Shyam	Park stre et	Kolkata	Wipr o	200 00

Hari	Nehru street	Hyderabad	TCS	50000
Ravi	M.G. Street	Delhi	NULL	NULL
Kuber	NULL	NULL	HCL	30000

3. Equi join:

It is also known as an inner join. It is the most common join. It is based on matched data as per the equality condition. The equi join uses the comparison operator(=).

Example:

CUSTOMER RELATION

CLASS_ID	NAME
1	John
2	Harry
3	Jackson

PRODUCT

PRODUCT_ID	CITY
1	Delhi
2	Mumbai
3	Noida

Input:

CUSTOMER ⋈ PRODUCT

Output:

CLASS_ID	NAME	PRODUCT_ID	CITY
1	John	1	Delhi
2	Harry	2	Mumbai
3	Harry	3	Noida