

SESSIONS 1

JOIN Table

Data Science Program

JOIN Table

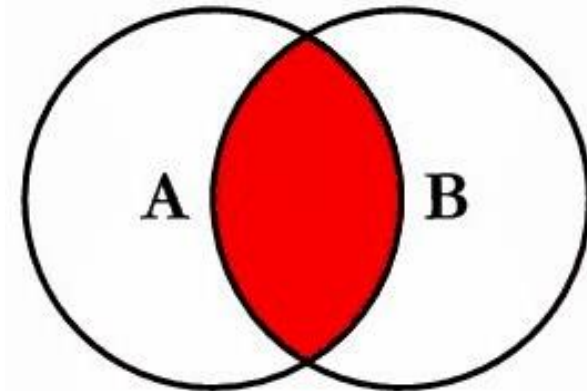
- A JOIN clause is used to combine rows from two or more tables, based on a related column between them.
- Here are the different types of the JOINS in SQL:
 - 1) **(INNER) JOIN**: Returns records that have matching values in both tables
 - 2) **LEFT (OUTER) JOIN**: Returns all records from the left table, and the matched records from the right table
 - 3) **RIGHT (OUTER) JOIN**: Returns all records from the right table, and the matched records from the left table
 - 4) **FULL (OUTER) JOIN**: Returns all records when there is a match in either left or right table

Inner JOIN

Inner JOIN

- The INNER JOIN keyword selects records that have matching values in both tables.

```
SELECT column_name(s)
FROM table1
INNER JOIN table2
ON table1.column_name = table2.column_name;
```



Inner JOIN

- **Employees table** INNER JOIN with **Salaries table** based on **emp_no**.

emp_no	birth_date	first_name	last_name	gender	hire_date
10001	1953-09-02	Georgi	Facello	M	1986-06-26
10002	1964-06-02	Bezael	Simmel	F	1985-11-21
10003	1959-12-03	Parto	Bamford	M	1986-08-28
10004	1954-05-01	Chirstian	Koblick	M	1986-12-01
10005	1955-01-21	Kyoichi	Maliniak	M	1989-09-12
10006	1953-04-20	Anneke	Preusig	F	1989-06-02
10007	1957-05-23	Tzvetan	Zielinski	F	1989-02-10
10008	1958-02-19	Saniya	Kalloufi	M	1994-09-15
10009	1952-04-19	Sumant	Peac	F	1985-02-18

Employees tables

emp_no	salary	from_date	to_date
10001	60117	1986-06-26	1987-06-26
10001	62102	1987-06-26	1988-06-25
10001	66074	1988-06-25	1989-06-25
10001	66596	1989-06-25	1990-06-25
10001	66961	1990-06-25	1991-06-25
10001	71046	1991-06-25	1992-06-24
10001	74333	1992-06-24	1993-06-24
10001	75286	1993-06-24	1994-06-24
10001	75994	1994-06-24	1995-06-24

Salaries tables

Inner JOIN

```
select employees.First_name, employees.Last_name, salaries.salary  
from employees JOIN salaries  
ON employees.emp_no = salaries.emp_no;
```

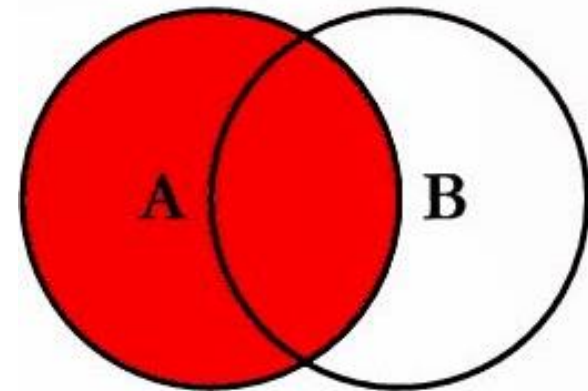
First_name	Last_name	salary
Florian	Syrotiuk	39507
Divier	Reistad	39520
Basil	Tramer	39735
Pradeep	Makrucki	39765
Shahaf	Famili	39935
Anneke	Preusig	40000
Patricio	Bridgland	40000
Eberhardt	Terkki	40000
Guoxiang	Nooteboom	40000

Left JOIN

Left JOIN

- The LEFT JOIN keyword returns all records from the left table (table1), and the matched records from the right table (table2). The result is NULL from the right side, if there is no match.
- In some databases LEFT JOIN is called LEFT OUTER JOIN.

```
SELECT column_name(s)  
FROM table1  
LEFT JOIN table2  
ON table1.column_name = table2.column_name;
```



Left JOIN

- **New_employees table** LEFT JOIN with **Dept_info table** based on **emp_no**.

emp_no	first_name	last_name	gender	hire_date	age
10001	Georgi	Facello	M	1986-06-26	47
10002	Bezalel	Simmel	F	1985-11-21	36
10003	Parto	Bamford	M	1986-08-28	41
10004	Chirstian	Koblick	M	1986-12-01	46
10005	Kyoichi	Maliniak	M	1989-09-12	45
10006	Anneke	Preusig	F	1989-06-02	47
10007	Tzvetan	Zielinski	F	1989-02-10	43
10008	Saniya	Kalloufi	M	1994-09-15	42
10009	Sumant	Peac	F	1985-02-18	48

New_employees tables

emp_no	dept_name
10011	Customer Service
10038	Customer Service
10049	Customer Service
10060	Customer Service
10088	Customer Service
10098	Customer Service
10112	Customer Service
10115	Customer Service
10126	Customer Service
10128	Customer Service

Dept_info tables

Left JOIN

```
select A.first_name, A.last_name, B.dept_name  
from new_employees A LEFT JOIN dept_info B  
ON A.emp_no = B.emp_no;
```

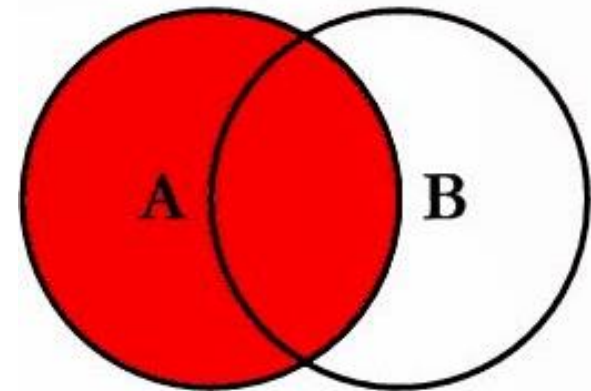
first_name	last_name	dept_name
Georgi	Facello	Development
Bezalel	Simmell	Sales
Parto	Bamford	Production
Chirstian	Koblick	Production
Kyoichi	Maliniak	Human Resources
Anneke	Preusig	Development
Tzvetan	Zielinski	Research
Saniya	Kalloufi	Development
Sumant	Peac	Quality Management
Duangkaew	Piveteau	Production

Right JOIN

Right JOIN

- The RIGHT JOIN keyword returns all records from the right table (table2), and the matched records from the left table (table1). The result is NULL from the left side, when there is no match.
- In some databases RIGHT JOIN is called RIGHT OUTER JOIN.

```
SELECT column_name(s)
FROM table1
RIGHT JOIN table2
ON table1.column_name = table2.column_name;
```



Right JOIN

- **New_employees table** RIGHT JOIN with **Dept_info table** based on **emp_no**.

emp_no	first_name	last_name	gender	hire_date	age
10001	Georgi	Facello	M	1986-06-26	47
10002	Bezalel	Simmel	F	1985-11-21	36
10003	Parto	Bamford	M	1986-08-28	41
10004	Chirstian	Koblick	M	1986-12-01	46
10005	Kyoichi	Maliniak	M	1989-09-12	45
10006	Anneke	Preusig	F	1989-06-02	47
10007	Tzvetan	Zielinski	F	1989-02-10	43
10008	Saniya	Kalloufi	M	1994-09-15	42
10009	Sumant	Peac	F	1985-02-18	48

New_employees tables

emp_no	dept_name
10011	Customer Service
10038	Customer Service
10049	Customer Service
10060	Customer Service
10088	Customer Service
10098	Customer Service
10112	Customer Service
10115	Customer Service
10126	Customer Service
10128	Customer Service

Dept_info tables

Right JOIN

```
select A.first_name, A.last_name, B.dept_name  
from new_employees A RIGHT JOIN dept_info B  
ON A.emp_no = B.emp_no;
```

first_name	last_name	dept_name
Mary	Sluis	Customer Service
Huan	Lortz	Customer Service
Basil	Tramer	Customer Service
Breannnda	Billingsley	Customer Service
Jungsoon	Syrzycki	Customer Service
Sreekrishna	Servieres	Customer Service
Yuichiro	Swick	Customer Service
Chikara	Rissland	Customer Service
Kayoko	Valtorta	Customer Service
Babette	Lamba	Customer Service

Self JOIN

Self JOIN

A self JOIN is a regular join, but the table is joined with itself.

```
SELECT column_name(s)  
FROM table1 T1, table1 T2  
WHERE condition;
```

T1 and *T2* are different table aliases for the same table.

Self JOIN

- **New_employees table** SELF JOIN with **Dept_info table** based on **emp_no**.

emp_no	first_name	last_name	gender	hire_date	age
10001	Georgi	Facello	M	1986-06-26	47
10002	Bezalel	Simmel	F	1985-11-21	36
10003	Parto	Bamford	M	1986-08-28	41
10004	Chirstian	Koblick	M	1986-12-01	46
10005	Kyoichi	Maliniak	M	1989-09-12	45
10006	Anneke	Preusig	F	1989-06-02	47
10007	Tzvetan	Zielinski	F	1989-02-10	43
10008	Saniya	Kalloufi	M	1994-09-15	42
10009	Sumant	Peac	F	1985-02-18	48

New_employees tables

emp_no	dept_name
10011	Customer Service
10038	Customer Service
10049	Customer Service
10060	Customer Service
10088	Customer Service
10098	Customer Service
10112	Customer Service
10115	Customer Service
10126	Customer Service
10128	Customer Service

Dept_info tables

Self JOIN

```
select E.first_name, E.last_name, E.age, D.dept_name
from new_employees E, dept_info D
where E.emp_no = D.emp_no;
```

first_name	last_name	age	dept_name
Mary	Sluis	47	Customer Service
Huan	Lortz	40	Customer Service
Basil	Tramer	39	Customer Service
Breannda	Billingsley	39	Customer Service
Jungsoon	Syrzycki	46	Customer Service
Sreekrishna	Servieres	39	Customer Service
Yuichiro	Swick	37	Customer Service
Chikara	Rissland	36	Customer Service
Kayoko	Valtorta	46	Customer Service
Babette	Lamba	42	Customer Service
Maren	Hutton	41	Customer Service

Reference

- https://www.w3schools.com/sql/sql_join.asp
- https://www.w3schools.com/sql/sql_join_inner.asp
- https://www.w3schools.com/sql/sql_join_left.asp
- https://www.w3schools.com/sql/sql_join_right.asp
- https://www.w3schools.com/sql/sql_join_full.asp
- https://www.w3schools.com/sql/sql_join_self.asp