

SQL joins explained



explain inner join, left, right, full, self joins with easiest examples

Sure! Let's go through each type of SQL join in the **easiest way**, using **simple tables** and **real-life examples**.

Scenario:

You have two tables:

1. Students table:

student_id	name
1	Alice
2	Bob
3	Charlie
4	David

2. Marks table:

student_id	score
1	85
2	90
4	75
5	60

◆ 1. INNER JOIN

Definition: Returns **only matching** rows from both tables.

```
sql

SELECT Students.name, Marks.score
FROM Students
INNER JOIN Marks ON Students.student_id = Marks.student_id;
```

Result:

name	score
Alice	85
Bob	90

name	score
David	75

✓ Only those students who **have marks**.

♦ 2. LEFT JOIN (or LEFT OUTER JOIN)

Definition: Returns **all records from the left table** (Students), and matched records from the right table (Marks). If no match, NULL.

```
sql

SELECT Students.name, Marks.score
FROM Students
LEFT JOIN Marks ON Students.student_id = Marks.student_id;
```

Result:

name	score
Alice	85
Bob	90
Charlie	NULL
David	75

✓ All students, even if they **don't have marks**.

♦ 3. RIGHT JOIN (or RIGHT OUTER JOIN)

Definition: Returns **all records from the right table** (Marks), and matched records from the left table (Students). If no match, NULL.

```
sql

SELECT Students.name, Marks.score
FROM Students
RIGHT JOIN Marks ON Students.student_id = Marks.student_id;
```

Result:

name	score
Alice	85
Bob	90
David	75
NULL	60

✓ All marks, even if **student is unknown**.

♦ 4. FULL JOIN (or FULL OUTER JOIN)

Definition: Returns **all records from both tables**, and matches where possible.

```
sql
```

```
SELECT Students.name, Marks.score
FROM Students
FULL OUTER JOIN Marks ON Students.student_id = Marks.student_id;
```

Result:

name	score
Alice	85
Bob	90
Charlie	NULL
David	75
NULL	60

✓ Combines LEFT and RIGHT join results — includes everything.

♦ 5. SELF JOIN

Definition: A table joins **with itself**, useful to compare rows within the same table.

Example Table: Employees

emp_id	name	manager_id
1	Alice	NULL
2	Bob	1
3	Charlie	1
4	David	2

Let's say you want to know who works under whom.

```
sql
```

```
SELECT E1.name AS Employee, E2.name AS Manager
FROM Employees E1
LEFT JOIN Employees E2 ON E1.manager_id = E2.emp_id;
```

Result:

Employee	Manager
Alice	NULL
Bob	Alice
Charlie	Alice
David	Bob

✓ One table (E1) joins with itself (E2) to find managers.

✓ Summary Table:

Join Type	Includes
INNER JOIN	Only matching rows
LEFT JOIN	All from left + matches
RIGHT JOIN	All from right + matches
FULL JOIN	All rows + matches
SELF JOIN	Join a table with itself

Let me know if you want me to show these using diagrams or run in MySQL/PostgreSQL syntax!