**SQL Joins – Simple Guide**

Joins are used to combine rows from two or more tables based on a related column between them (usually a **foreign key**).

**1. INNER JOIN**

➡ Returns only the rows that have matching values in **both** tables.

**Example:**

SELECT Customers.CustomerName, Orders.OrderID

FROM Customers

INNER JOIN Orders ON Customers.CustomerID = Orders.CustomerID;

📌 Output → Customers **who placed at least one order**.

**2. LEFT JOIN (or LEFT OUTER JOIN)**

➡ Returns **all rows from the left table**, and the matching rows from the right table.  
➡ If no match, it returns NULL for right table columns.

**Example:**

SELECT Customers.CustomerName, Orders.OrderID

FROM Customers

LEFT JOIN Orders ON Customers.CustomerID = Orders.CustomerID;

📌 Output → **All customers**, with their orders if they exist, else NULL.

**3. RIGHT JOIN (or RIGHT OUTER JOIN)**

➡ Opposite of LEFT JOIN.  
➡ Returns **all rows from the right table**, and the matching rows from the left table.

**Example:**

SELECT Customers.CustomerName, Orders.OrderID

FROM Customers

RIGHT JOIN Orders ON Customers.CustomerID = Orders.CustomerID;

📌 Output → **All orders**, with customer details if they exist, else NULL.

**4. FULL JOIN (or FULL OUTER JOIN)**

➡ Returns **all rows when there is a match in either table**.  
➡ If no match, NULL is filled for missing data.

**Example:**

SELECT Customers.CustomerName, Orders.OrderID

FROM Customers

FULL OUTER JOIN Orders ON Customers.CustomerID = Orders.CustomerID;

📌 Output → **All customers and all orders**, matched where possible.

**5. CROSS JOIN**

➡ Returns the **cartesian product** of two tables (every row from one combined with every row from the other).  
➡ Usually used carefully since it can return huge results.

**Example:**

SELECT Customers.CustomerName, Products.ProductName

FROM Customers

CROSS JOIN Products;

📌 Output → Every possible combination of **Customer × Product**.

**6. SELF JOIN**

➡ A table joins with **itself**.  
➡ Used when you need to compare rows within the same table.

**Example:**

SELECT A.EmployeeName AS Employee, B.EmployeeName AS Manager

FROM Employees A

INNER JOIN Employees B ON A.ManagerID = B.EmployeeID;

📌 Output → Employees and their Managers.

**Quick Summary**

| **Join Type** | **What it Returns** |
| --- | --- |
| INNER JOIN | Only matching rows from both tables |
| LEFT JOIN | All rows from LEFT + matching from RIGHT |
| RIGHT JOIN | All rows from RIGHT + matching from LEFT |
| FULL JOIN | All rows from BOTH tables |
| CROSS JOIN | Every possible combination |
| SELF JOIN | Table joined with itself |