In SQL, a JOIN is used to combine and retrieve rows from multiple tables using a shared related column. These JOINs come in five different variants. These are INNER, LEFT, RIGHT, FULL, AND SELF. Many of these JOINs are easiest to understand if you can visualize that you have the different tables laid out in front of you one beside another.

The INNER JOIN is used to select all the rows in two or more tables, provided there is a matching value in the specified column or columns. What this means is that we can use this command to generate an output that shows us all the fields in multiple tables for any records with the specified common field, such as customer\_id.

The LEFT JOIN is used to return all the records from the left table and only the matching record(s) from the right table, provided there is a match found. This is the first case in which the visualization of the tables laying side by side in front of you is helpful to understand what we are asking for. In this case the left table is the only one from which we will see all fields. The table on the right will only display the fields for the records we have selected by a particular set of values in the field they share. If there are no matches for the values we specify, the right table will return the row in the right table is filled with NULL values.

The RIGHT JOIN then, is just the opposite of the LEFT JOIN, returning all the records from the right table and only the matching record(s) from the left table, provided there is a match found. So, in this case, the right table is the only one from which we will see all fields. The table on the left will only display the fields for the records we have selected by a particular set of values in the field they share and if there are no matches for the values we specify, the left table will return the row in the left table filled with NULL values.

A FULL JOIN, is also called a FULL OUTER JOIN. In theory, a full outer join is the combination of a left join and a right join. The full outer join includes all rows from the joined tables whether the other table has the matching row or not. If the rows in the joined tables do not match, the result set of the full outer join contains NULL values for every column of the table that lacks a matching row. For the matching rows, a single row that has the columns populated from the joined table is included in the result set. (SQLTUTORIAL, 2022)

The SELF JOIN is exactly as the name implies, used to join a table with itself when the table is listed with two or more aliases. This JOIN is used to compare rows to other rows within the same table.

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