### AGGREGATE FUNCTIONs AND JOINs

**What is JOIN?**

**Introduction**

In this section, we will introduce you to *JOIN clauses*. A JOIN clause is used to combine two or more tables into a single table. Joins are usually applied based on the keys that define the relationship between those tables or on common fields.

**💡Tips:**

* In most cases this joins are created using the primary key of one table and the foreign key of the table we want to join it with.

We've added a new table "departments" to our company database. We have now two tables "employees" and "departments" in the database. Now let's examine those two tables. In the "departments" table, the names of the employees are not written, only the ID numbers of the employees are written.

Let's look at the "employees" table:

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### Then, let's look at the "departments" table:

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### When looking at the "departments" table, it is not easy to understand which employee is working in which department, since this table does not contain the names of the employees. For this purpose, two tables should be combined and the name and surname of that employee should be found by looking at the "employees" table for each employee ID in the "departments" table. The "emp\_id" is the column that will form the relationship between the two tables above.

### JOIN Types

There are basically five types of JOINs: INNER JOIN, LEFT JOIN, RIGHT JOIN, FULL OUTER JOIN and CROSS JOIN. As a special case, a table can join to itself and this type is called SELF JOIN.

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Let's make a brief description of JOIN types without going in-depth:

* **INNER JOIN:** Returns the common records in both tables.
* **LEFT JOIN:** Returns all records from the left table and matching records from the right table.
* **RIGHT JOIN:** Returns all records from the right table and matching records from the left table.
* **FULL OUTER JOIN:** Returns all records of both left and right tables.
* **CROSS JOIN:** Returns the Cartesian product of records in joined tables.
* **SELF JOIN:** A join of a table to itself.

In our course, we'll focus on INNER join and LEFT join which are commonly used.

Q: What is a Join?  
A: The SQL Join clause is used to combine records (rows) from two or more tables in a SQL database based on a related column between the two.

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