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When data is written typically it is put into one table. After one table another may be added and another, and another. Sometimes these tables relate to one another and when wanting to take a piece from each you need a command in MySQL. To combine rows from two or more tables, JOINS are used. The rows selected are typically related between the two tables. JOINS are helpful when the tables have too many one-to-many relationships and too many many-to-many relationships. There are also different JOINS that can be used depending on the rows you want extracted.

The first JOIN is the INNER JOIN. This JOIN uses how two tables are related and would return a single row for each piece of data. This one requires that the value be in both tables, otherwise it will fail. When using it with multiple tables you need three tables and two JOINS in the subclauses. This is the default statement, so when a query uses INNER JOIN or JOIN, it uses the same type. You can also use Self-Joins that use data with foreign keys that are in the same table. This would need an alias when joining for example, the table is cars, and we are looking for a make of a car and also trim levels of the make of a car. You would use;

SELECT car\_make, car\_trim

FROM cars c

INNER JOIN cars c\_alt

ON c\_alt.make\_id = c.trim\_id

WHERE c.trim\_id IS NOT NULL;

Along with INNER JOIN there is also LEFT JOIN, RIGHT JOIN, and CROSS JOIN. LEFT JOIN selects data from the left table and compares each row with the right table. If it satisfies the JOIN it takes all the data from each table and adds this result row. If they were not satisfied it would create a result with the left table data and a NULL for the right table. The RIGHT JOIN acts the same as the left just using the right table. CROSS JOINS are not like the other JOINS and do not need a join condition. CROSS JOINS creates a Cartesian Product and combines both tables in the result set. A Cartesian Product is combining each piece of data in one table with each piece of data in another creating a giant table, simply put multiplying the number of items in one table and multiplying it with the number of items in another table.