

Set theory

A set is a collection of objects (elements).

Basics

Subset: A set contained within another set.

Empty set: A set with no elements (denoted by {}).

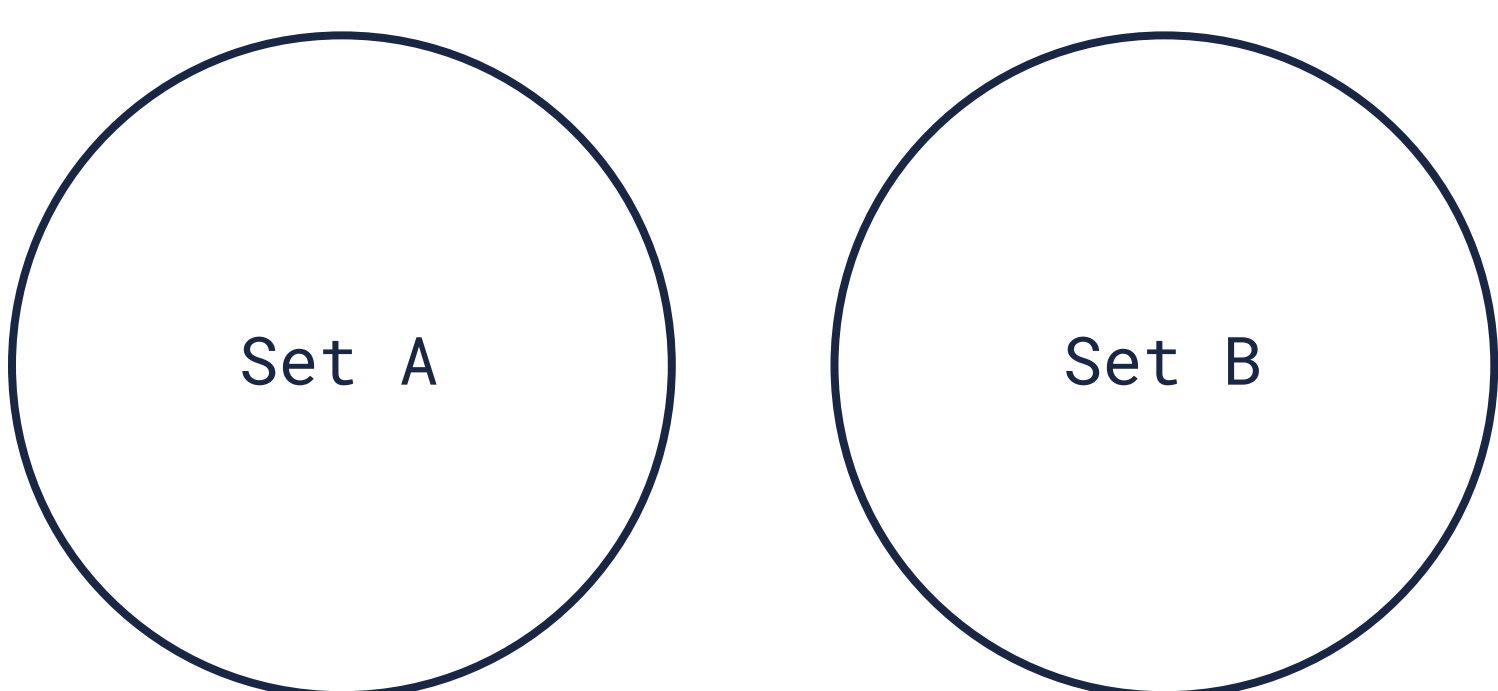
Rules of set operations

- Tables must have the same number of columns for comparison and combination.
- Columns used in set operations must have compatible data types.

Venn diagrams

Graphical representation for **illustrating logical relationships** between sets (tables).

Each set is represented by a **circle**, and the area inside the circle contains **elements (records)** of the set.



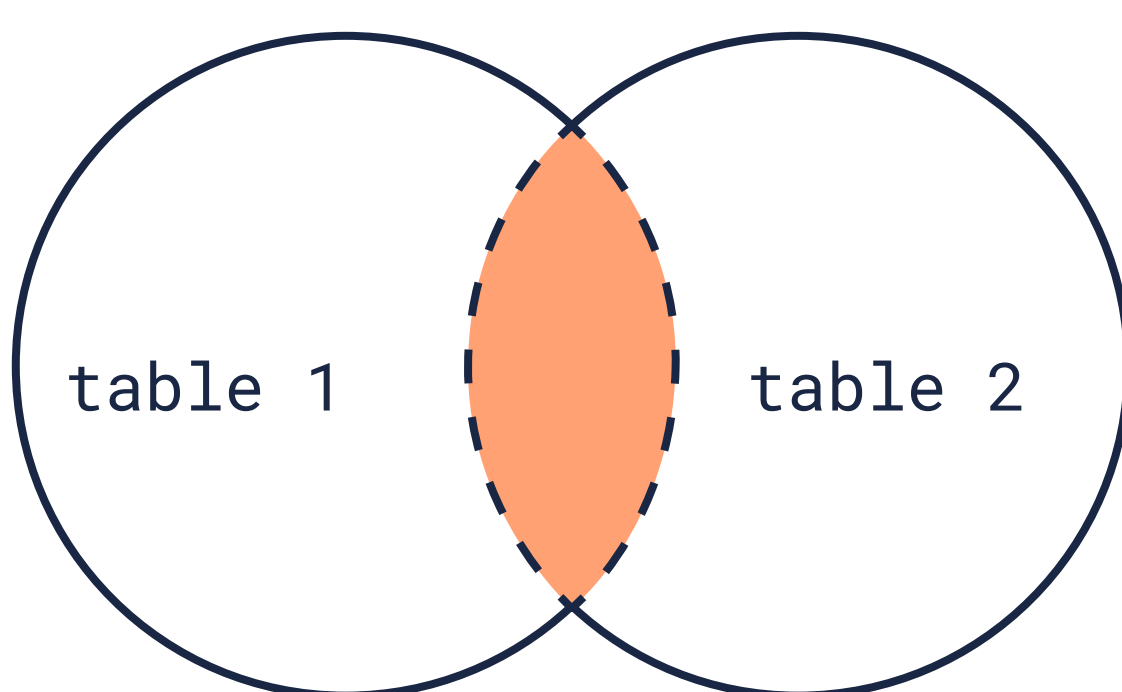
Joins

Used to combine data from **two or more tables** based on a **related column** between them.

INNER JOIN

Returns only the **rows from both tables** where there is a match between the **specified columns** in each table.

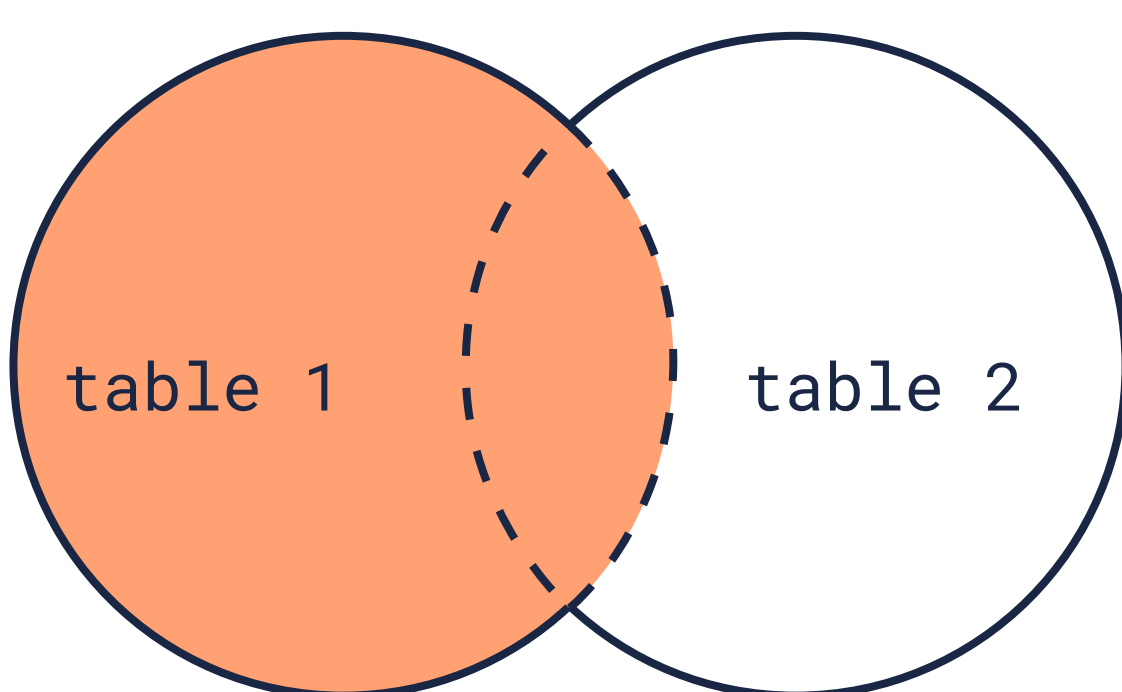
Syntax:
SELECT
 columns
FROM
 table1
INNER JOIN
 table2
ON
 table1.column_name = table2.column_name;



LEFT JOIN/LEFT OUTER JOIN

Returns **all the rows from the left table** and only the **matching rows from the right table**.

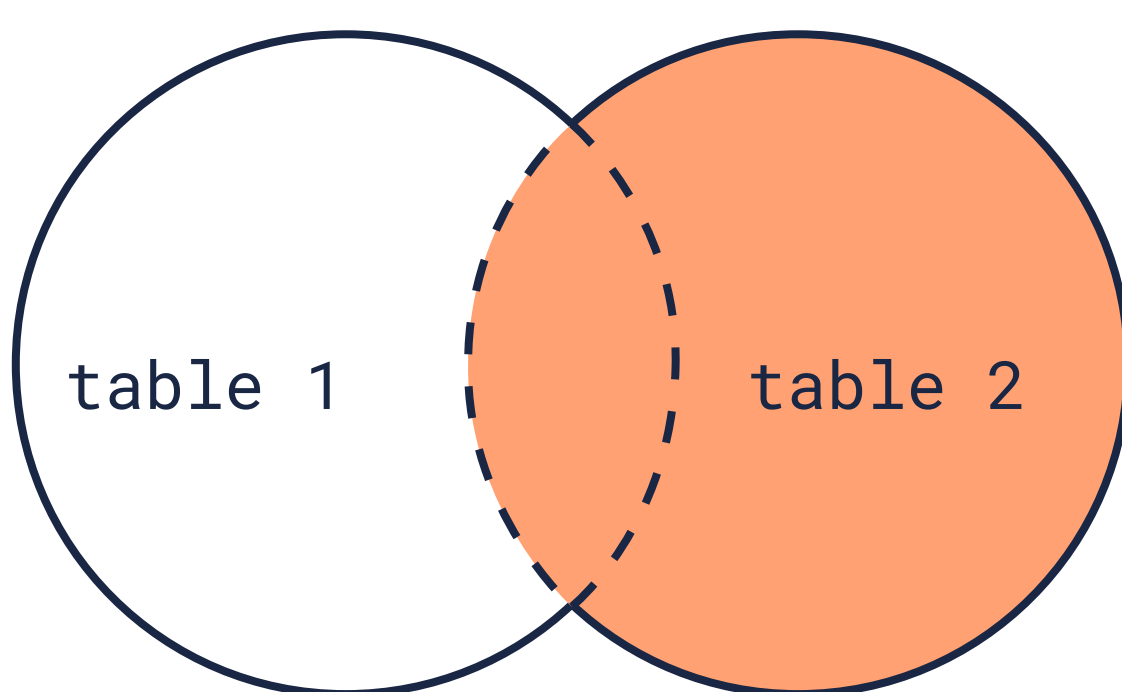
Syntax:
SELECT
 columns
FROM
 table1
LEFT JOIN
 table2
ON
 table1.column_name = table2.column_name;



RIGHT JOIN/RIGHT OUTER JOIN

Returns **all the rows from the right table** and the **matching rows from the left table**.

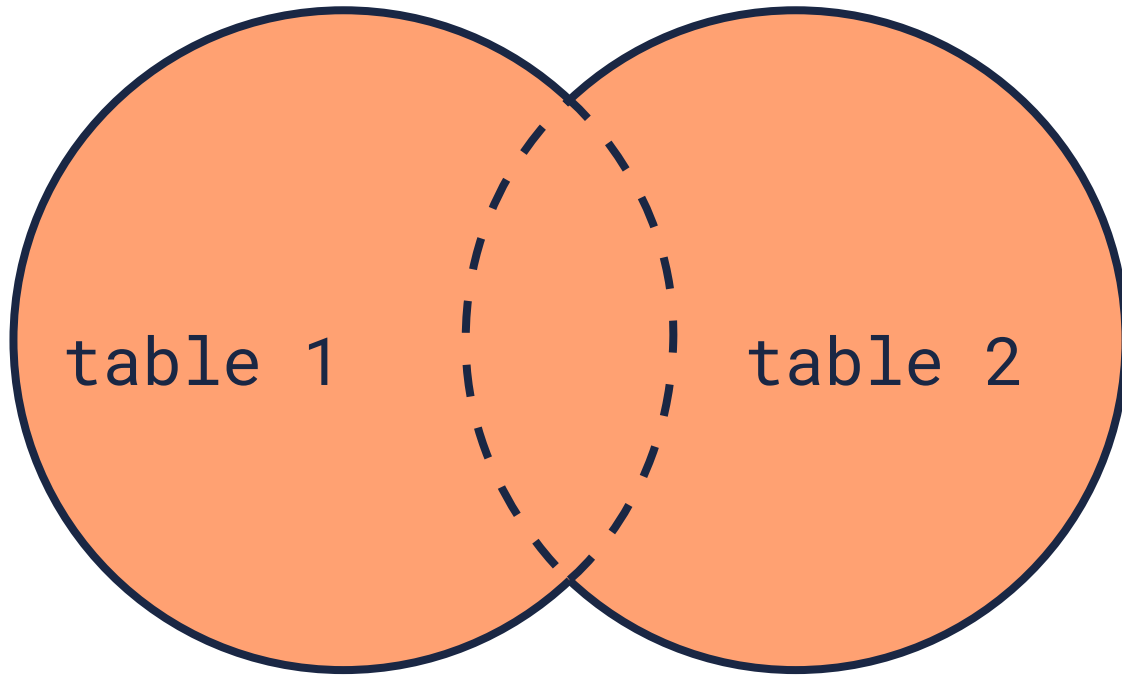
Syntax:
SELECT
 columns
FROM
 table1
RIGHT JOIN
 table2
ON
 table1.column_name = table2.column_name;



FULL OUTER JOIN

Returns **all the rows from both tables**, including unmatched rows from both the left and right tables.

Syntax:
SELECT
 columns
FROM
 table1
FULL OUTER JOIN
 table2
ON
 table1.column_name = table2.column_name;



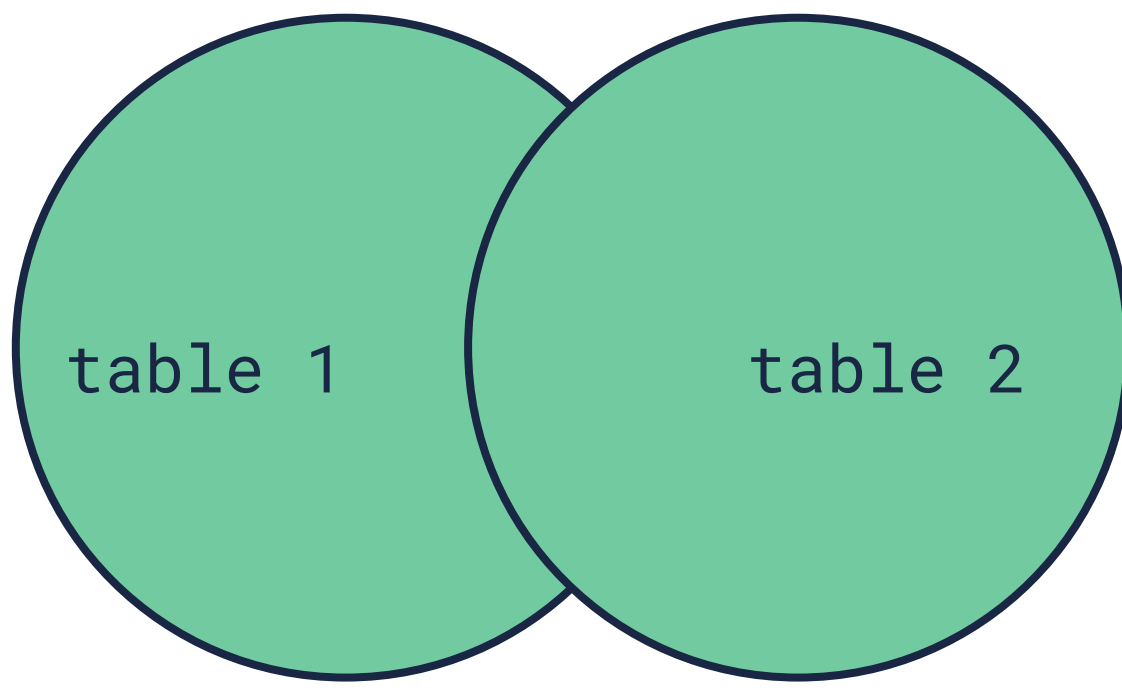
Set operations

Used to combine the data from the **results of two or more SELECT** queries into a single result set.

UNION

Combines the results of **two or more SELECT queries** into a single result set while **removing duplicates**.

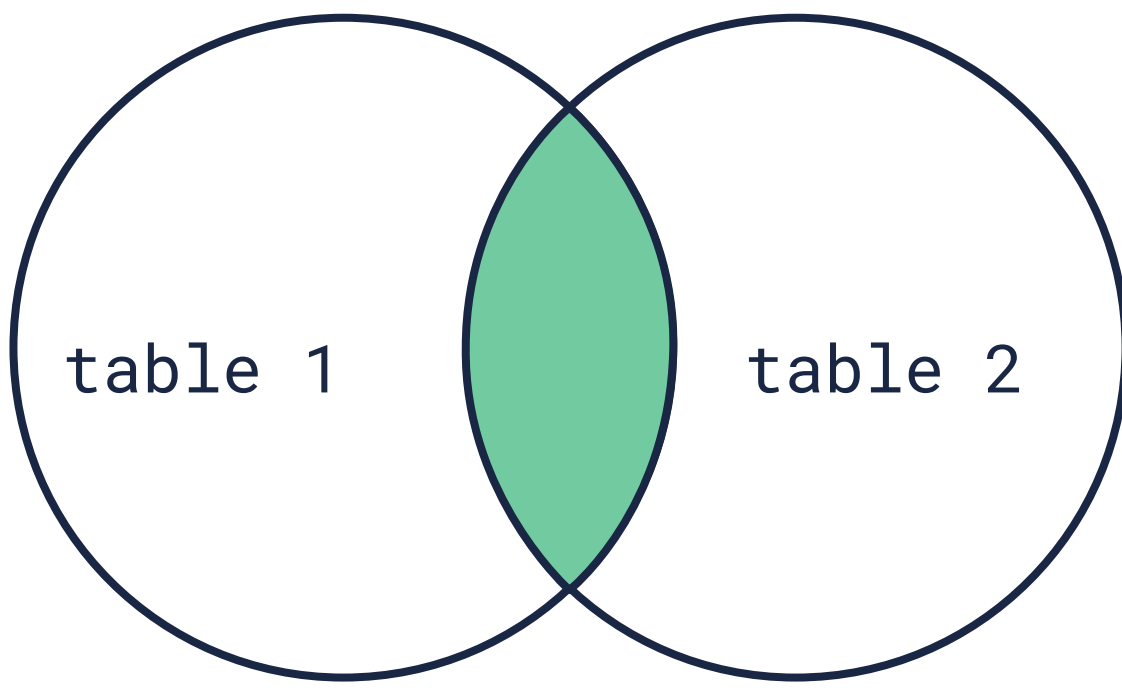
Syntax:
SELECT
 columns
FROM
 table1
UNION
SELECT
 columns
FROM
 table2;



INTERSECT

Combines the results of **two or more SELECT queries** and returns **only the rows that appear in all the result sets**.

Syntax:
SELECT
 columns
FROM
 table1
INTERSECT
SELECT
 columns
FROM
 table2;



EXCEPT

Retrieves the **rows that appear in the first SELECT query but not in the second SELECT query**. Used to find the **difference between the results of two queries**.

Syntax:
SELECT
 columns
FROM
 table1
EXCEPT
SELECT
 columns
FROM
 table2;

