

Complete SQL Field Guide

All 70 entries from the online field guide, organized by category with examples, dialect notes, difficulty, and browser-playground compatibility.

Dialect note: SQL syntax differs across PostgreSQL, SQL Server, MySQL, Oracle, SQLite, and browser engines. Check the dialect column before using an example.

Query basics

Function / clause	What it does	Example	Dialect	Level	Lab
SELECT	Chooses the columns or expressions returned by a query.	<code>SELECT name, district FROM tributes;</code>	Standard	Beginner	Yes
DISTINCT	Removes duplicate result rows.	<code>SELECT DISTINCT district FROM tributes;</code>	Standard	Beginner	Yes
ORDER BY	Sorts results ascending or descending.	<code>ORDER BY score DESC, name ASC</code>	Standard	Beginner	Yes
LIMIT	Returns only a specified number of rows.	<code>SELECT * FROM tributes LIMIT 5;</code>	PostgreSQL / MySQL / SQLite	Beginner	Yes
FETCH FIRST	Standard-SQL alternative for limiting rows.	<code>FETCH FIRST 5 ROWS ONLY</code>	Standard / PostgreSQL	Intermediate	No
AS	Gives a column or table a temporary alias.	<code>SELECT score AS training_score FROM tributes;</code>	Standard	Beginner	Yes

Filtering

Function / clause	What it does	Example	Dialect	Level	Lab
WHERE	Keeps only rows that meet a condition.	<code>SELECT * FROM tributes WHERE score >= 8;</code>	Standard	Beginner	Yes
AND / OR / NOT	Combines or reverses filtering conditions.	<code>WHERE district = 12 AND score >= 8</code>	Standard	Beginner	Yes
IN	Matches any value in a list.	<code>WHERE district IN (4, 7, 12)</code>	Standard	Beginner	Yes
BETWEEN	Tests whether a value falls inside an inclusive range.	<code>WHERE score BETWEEN 7 AND 10</code>	Standard	Beginner	Yes
LIKE	Matches a text pattern using % and _ wildcards.	<code>WHERE name LIKE 'K%';</code>	Standard	Beginner	Yes

Nulls

Function / clause	What it does	Example	Dialect	Level	Lab
IS NULL	Finds missing values; use IS NOT NULL for present values.	<code>WHERE mentor IS NULL</code>	Standard	Beginner	Yes
COALESCE()	Returns the first non-null expression.	<code>COALESCE(mentor, 'Unknown')</code>	Standard	Beginner	Yes
NULLIF()	Returns NULL when two expressions are equal.	<code>points / NULLIF(events, 0)</code>	Standard	Intermediate	Yes

Aggregate

Function / clause	What it does	Example	Dialect	Level	Lab
COUNT()	Counts rows or non-null values.	<code>SELECT COUNT(*) AS tributes FROM tributes;</code>	Standard	Beginner	Yes
SUM()	Adds numeric values.	<code>SELECT SUM(points) FROM arena_events;</code>	Standard	Beginner	Yes
AVG()	Calculates the arithmetic mean.	<code>SELECT AVG(score) FROM tributes;</code>	Standard	Beginner	Yes
MIN() / MAX()	Returns the smallest or largest value.	<code>SELECT MIN(score), MAX(score) FROM tributes;</code>	Standard	Beginner	Yes
FILTER	Applies a condition to one aggregate calculation.	<code>COUNT(*) FILTER (WHERE score >= 8)</code>	PostgreSQL	Advanced	No

Grouping

Function / clause	What it does	Example	Dialect	Level	Lab
GROUP BY	Combines rows into groups for aggregate calculations.	<code>SELECT district, AVG(score) FROM tributes GROUP BY district;</code>	Standard	Beginner	Yes
HAVING	Filters groups after aggregation.	<code>GROUP BY district HAVING AVG(score) >= 8</code>	Standard	Intermediate	Yes

Conditional

Function / clause	What it does	Example	Dialect	Level	Lab
CASE	Creates conditional values inside a query.	<code>CASE WHEN score >= 8 THEN 'High' ELSE 'Other' END</code>	Standard	Intermediate	Yes

Conversion

Function / clause	What it does	Example	Dialect	Level	Lab
CAST()	Converts a value to another data type.	<code>CAST(score AS DECIMAL(5,2))</code>	Standard	Intermediate	Yes

Numeric

Function / clause	What it does	Example	Dialect	Level	Lab
ROUND()	Rounds a number to a chosen precision.	<code>ROUND(AVG(score), 2)</code>	Common	Beginner	Yes
ABS()	Returns a number's absolute value.	<code>ABS(final_score - initial_score)</code>	Standard	Beginner	Yes
CEILING() / CEIL()	Rounds a number upward to an integer.	<code>CEILING(7.2)</code>	Common	Beginner	Yes
FLOOR()	Rounds a number downward to an integer.	<code>FLOOR(7.9)</code>	Standard	Beginner	Yes
POWER()	Raises a number to a power.	<code>POWER(score, 2)</code>	Common	Intermediate	Yes
SQRT()	Returns a square root.	<code>SQRT(points)</code>	Common	Intermediate	Yes
MOD()	Returns the remainder after division.	<code>MOD(district, 2)</code>	Common	Intermediate	Yes

Text

Function / clause	What it does	Example	Dialect	Level	Lab
LOWER() / UPPER()	Changes text to lower- or uppercase.	<code>UPPER(name)</code>	Standard	Beginner	Yes
TRIM()	Removes leading and trailing spaces.	<code>TRIM(name)</code>	Standard	Beginner	Yes
LTRIM() / RTRIM()	Removes spaces from one side of text.	<code>LTRIM(name)</code>	Common	Beginner	Yes
LENGTH() / LEN()	Counts characters; the name varies by dialect.	<code>LENGTH(name)</code>	Dialect varies	Beginner	No
SUBSTRING()	Extracts part of a text value.	<code>SUBSTRING(name FROM 1 FOR 3)</code>	Standard / syntax varies	Intermediate	No
REPLACE()	Replaces matching text.	<code>REPLACE(name, ' ', '_')</code>	Common	Beginner	Yes
CONCAT()	Combines text values.	<code>CONCAT(name, ' – District ', district)</code>	Common	Beginner	Yes
STRING_AGG()	Combines values from multiple rows into one string.	<code>STRING_AGG(name, ', ' ORDER BY name)</code>	PostgreSQL / SQL Server	Advanced	No
REGEXP_REPLACE()	Replaces text that matches a regular expression.	<code>REGEXP_REPLACE(name, '^[A-Za-z]', '', 'g')</code>	PostgreSQL	Advanced	No

Date/time

Function / clause	What it does	Example	Dialect	Level	Lab
CURRENT_DATE	Returns today's date.	SELECT CURRENT_DATE;	Standard	Beginner	No
CURRENT_TIMESTAMP	Returns the current date and time.	SELECT CURRENT_TIMESTAMP;	Standard	Beginner	No
EXTRACT()	Pulls a component such as year or month from a date.	EXTRACT(YEAR FROM event_date)	Standard / PostgreSQL	Intermediate	No
DATE_TRUNC()	Rounds a timestamp down to a time unit.	DATE_TRUNC('month', event_date)	PostgreSQL	Intermediate	No
AGE()	Calculates an interval between dates.	AGE(CURRENT_DATE, birth_date)	PostgreSQL	Intermediate	No
INTERVAL	Represents a duration used in date arithmetic.	event_date + INTERVAL '30 days'	PostgreSQL	Intermediate	No

Joins

Function / clause	What it does	Example	Dialect	Level	Lab
INNER JOIN	Returns rows that match in both tables.	FROM tributes t JOIN arena_events e ON t.id = e.tribute_id	Standard	Intermediate	Yes
LEFT JOIN	Keeps every left-table row and matching right rows.	FROM tributes t LEFT JOIN arena_events e ON t.id = e.tribute_id	Standard	Intermediate	Yes
RIGHT JOIN	Keeps every right-table row and matching left rows.	FROM tributes t RIGHT JOIN arena_events e ON t.id = e.tribute_id	Standard	Intermediate	Yes
FULL OUTER JOIN	Keeps matched and unmatched rows from both tables.	FROM tributes t FULL OUTER JOIN arena_events e ON t.id = e.tribute_id	Standard	Advanced	Yes
CROSS JOIN	Returns every possible pairing of two tables.	FROM tributes CROSS JOIN arenas	Standard	Advanced	Yes

Set operations

Function / clause	What it does	Example	Dialect	Level	Lab
UNION	Stacks query results and removes duplicates.	SELECT name FROM tributes UNION SELECT name FROM mentors;	Standard	Intermediate	Yes
UNION ALL	Stacks query results and keeps duplicates.	SELECT name FROM tributes UNION ALL SELECT name FROM mentors;	Standard	Intermediate	Yes
INTERSECT	Returns rows present in both query results.	query_one INTERSECT query_two	Standard	Advanced	No
EXCEPT	Returns first-query rows absent from the second.	query_one EXCEPT query_two	Standard / PostgreSQL	Advanced	No

Query structure

Function / clause	What it does	Example	Dialect	Level	Lab
WITH (CTE)	Names a temporary result used by the main query.	WITH ranked AS (SELECT * FROM tributes) SELECT * FROM ranked;	Standard	Intermediate	Yes

Subqueries

Function / clause	What it does	Example	Dialect	Level	Lab
EXISTS	Tests whether a subquery returns at least one row.	WHERE EXISTS (SELECT 1 FROM arena_events e WHERE e.tribute_id = t.id)	Standard	Advanced	Yes

Window

Function / clause	What it does	Example	Dialect	Level	Lab
ROW_NUMBER()	Assigns a unique sequence number within a result.	ROW_NUMBER() OVER (ORDER BY score DESC)	Standard / PostgreSQL	Advanced	No
RANK()	Ranks rows with gaps after ties.	RANK() OVER (ORDER BY score DESC)	Standard / PostgreSQL	Advanced	No
DENSE_RANK()	Ranks rows without gaps after ties.	DENSE_RANK() OVER (ORDER BY score DESC)	Standard / PostgreSQL	Advanced	No
LAG() / LEAD()	Reads a value from a previous or following row.	LAG(score) OVER (ORDER BY event_date)	Standard / PostgreSQL	Advanced	No
FIRST_VALUE() / LAST_VALUE()	Returns the first or last value in a window frame.	FIRST_VALUE(score) OVER (PARTITION BY district ORDER BY event_date)	Standard / PostgreSQL	Advanced	No
NTILE()	Splits ordered rows into a chosen number of groups.	NTILE(4) OVER (ORDER BY score DESC)	Standard / PostgreSQL	Advanced	No

Statistical

Function / clause	What it does	Example	Dialect	Level	Lab
PERCENTILE_CONT()	Calculates an interpolated percentile, including the median.	PERCENTILE_CONT(0.5) WITHIN GROUP (ORDER BY score)	PostgreSQL / SQL Server / Oracle	Advanced	No
STDDEV_SAMP()	Estimates the sample standard deviation.	STDDEV_SAMP(score)	Standard / PostgreSQL	Advanced	No
VAR_SAMP()	Estimates the sample variance.	VAR_SAMP(score)	Standard / PostgreSQL	Advanced	No

PostgreSQL

Function / clause	What it does	Example	Dialect	Level	Lab
GENERATE_SERIES()	Generates a sequence of numbers or dates.	<code>SELECT * FROM GENERATE_SERIES(1, 12);</code>	PostgreSQL	Advanced	No
TO_CHAR()	Formats dates or numbers as text.	<code>TO_CHAR(event_date, 'Mon YYYY')</code>	PostgreSQL	Intermediate	No
TO_DATE()	Parses text into a date using a format.	<code>TO_DATE('08/17/2026', 'MM/DD/YYYY')</code>	PostgreSQL	Intermediate	No
JSONB_EXTRACT_PATH_TEXT()	Reads text from a JSONB value at a path.	<code>JSONB_EXTRACT_PATH_TEXT(details, 'weapon')</code>	PostgreSQL	Advanced	No
ARRAY_AGG()	Collects grouped values into an array.	<code>ARRAY_AGG(name ORDER BY name)</code>	PostgreSQL	Advanced	No