

SQL Cheat Sheet for Beginners

Essential SQL commands — explained simply

SELECT — Read data

```
SELECT col1, col2 FROM table_name;
SELECT * FROM customers;
SELECT name AS alias FROM users;
*= all columns AS renames column in results
```

WHERE — Filter rows

Operator	Meaning	Example
=	equals	WHERE age = 25
!=	not equal	WHERE city != 'Cairo'
> / <	compare	WHERE price > 10
BETWEEN	range	BETWEEN 18 AND 30
LIKE	pattern	WHERE name LIKE 'A%'
IN	list	IN ('Cairo','London')
IS NULL	empty	WHERE email IS NULL
% = any chars _ = one char 'A%' = starts with A		

ORDER BY — Sort results

```
SELECT * FROM products ORDER BY price ASC;
SELECT * FROM products ORDER BY price DESC;
```

LIMIT — Cap row count

```
SELECT * FROM orders LIMIT 10;
SELECT * FROM orders LIMIT 10 OFFSET 20;
OFFSET skips rows — useful for pagination
```

Aggregate functions

Function	What it does
COUNT(*)	Count all rows
COUNT(col)	Count non-null values
SUM(col)	Total of all values
AVG(col)	Average value
MIN(col)	Smallest value
MAX(col)	Largest value

GROUP BY — Summarize by category

```
SELECT country, COUNT(*) AS total
FROM customers GROUP BY country;

SELECT country, SUM(amount) AS rev
FROM orders GROUP BY country
ORDER BY rev DESC;
```

HAVING — Filter after GROUP BY

```
SELECT country, COUNT(*) AS total
FROM customers
GROUP BY country HAVING COUNT(*) > 5;
WHERE filters rows first. HAVING filters groups after.
```

JOINS — Connect tables

JOIN type	Returns
INNER JOIN	Matched rows in both tables
LEFT JOIN	All left rows + matched right
RIGHT JOIN	All right rows + matched left
FULL JOIN	All rows from both tables

```
SELECT c.name, o.product
FROM customers c
INNER JOIN orders o ON c.id = o.customer_id;

-- Keep all customers (even with no orders)
SELECT c.name, o.product
FROM customers c
LEFT JOIN orders o ON c.id = o.customer_id;
```

INSERT — Add new rows

```
INSERT INTO customers (name, email, city)
VALUES ('Sara', 'sara@email.com', 'Cairo');
```

UPDATE — Change existing rows

```
UPDATE customers
SET city = 'Alexandria'
WHERE id = 1;
Always use WHERE — without it every row changes!
```

DELETE — Remove rows

```
DELETE FROM customers WHERE id = 5;
Always use WHERE — without it ALL rows are deleted!
```

CREATE TABLE

```
CREATE TABLE customers (
  id      INTEGER PRIMARY KEY,
  name    TEXT      NOT NULL,
  email   TEXT      UNIQUE,
  country TEXT
);
```

Common data types

Type	Use for
INTEGER	Whole numbers (1, 42, 1000)
DECIMAL	Prices and amounts (9.99)
TEXT/VARCHAR	Names, emails, strings
DATE	Dates (2024-01-15)
BOOLEAN	True / false values

Clause order — always this sequence

#	Clause	Purpose
1	SELECT	Columns to show
2	FROM	Which table
3	WHERE	Filter rows
4	GROUP BY	Group rows
5	HAVING	Filter groups

Always end with ;

Good habit even if optional

Test before DELETE/UPDATE

Run SELECT first to preview

SQL is case-insensitive

SELECT = select = Select

Text needs single quotes

WHERE city = 'Cairo'