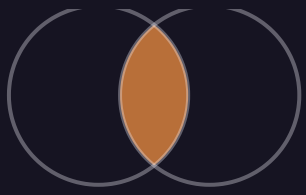
D8A CHEATSHEET · #001 · SQL

SQL JOINs, explained visually.

D8A.ACADEMY/RESOURCES/SQL-JOINS

01 INNER JOIN

Only rows that match on both sides. No match, no row.

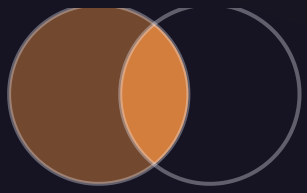


```sql
SELECT o.id, c.name
FROM orders o
INNER JOIN customers c
  ON o.customer_id = c.id;
```

→ Orders without a known customer simply disappear from the result.

02 LEFT JOIN

Everything from the left table. NULLs where the right side has no match.



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

→ Keeps every customer, even the ones who never ordered. This is the join you will use 80% of the time.

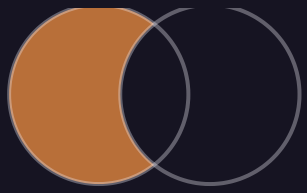
03 RIGHT & FULL

RIGHT is just LEFT with the tables swapped. FULL keeps everything from both sides.

→ Pro habit: nobody reads RIGHT JOINs. Reorder the tables and use LEFT instead.

06 Bonus: the anti-join

Rows from the left that have NO match on the right.



```sql
-- customers who never ordered
SELECT c.name
FROM customers c
LEFT JOIN orders o
  ON o.customer_id = c.id
WHERE o.id IS NULL;
```

→ The single most useful interview pattern. Learn it once, use it forever.

⚠ THE TWO TRAPS THAT PRODUCE SILENT WRONG NUMBERS

04 Trap 01: JOINs multiply rows

If the right side has 3 matching rows, your left row appears 3 times.

CUSTOMER	ORDER_ID	AMOUNT
Amina	#1001	90
Amina	#1002	90
Amina	#1003	90

⚠ same 90 counted three times → SUM = 270

→ SUM(amount) now returns 270 instead of 90. Your revenue "tripled" and no error was thrown. Aggregate before you join, or join on the grain you report on.

05 Trap 02: the hidden INNER JOIN

A WHERE clause on the right table turns your LEFT JOIN into an INNER JOIN.

```sql
-- looks like a LEFT JOIN, behaves like INNER
SELECT c.name, o.id
FROM customers c
LEFT JOIN orders o ON o.customer_id = c.id
WHERE o.status = 'paid';   -- kills the NULL rows

-- fix: filter inside the join
LEFT JOIN orders o ON o.customer_id = c.id
  AND o.status = 'paid';
```

→ NULL never passes a WHERE comparison, so every unmatched customer is dropped.