

How to improve SQL query efficiency

by understanding
SQL's order of
operations



Dawn Choo

**SQL does NOT
execute queries in the
same order it is written in.**

Wait, what?

SELECT

FROM

JOIN

WHERE

GROUP BY

HAVING

ORDER BY

LIMIT

SQL commands
are written
in this order

**But are
executed
in this order**

FROM

JOIN

WHERE

GROUP BY

HAVING

SELECT

ORDER BY

LIMIT

**So how do we use
SQL order of operations
to write **efficient** queries?**

Start by optimizing the FROM clause

FROM is the first command executed.
It sets the foundation for your query.



When using multiple tables, always
start with the smallest table to
reduce initial data volume.

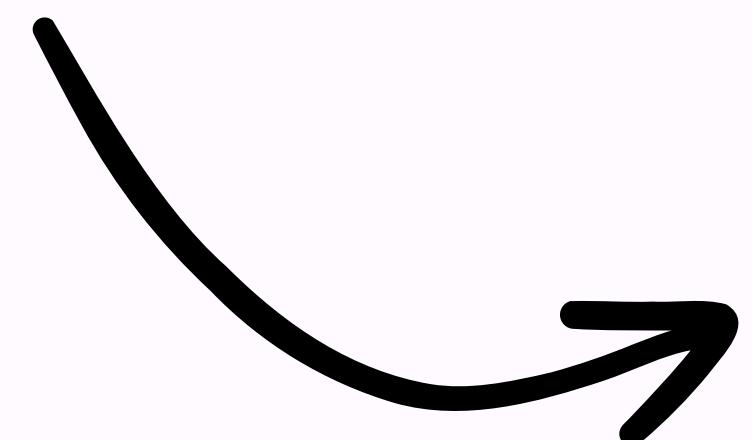
**The real game-changer:
is to optimize your JOINs
using the SQL order of operations**

How though?

**JOINS are one of the first
to be executed**

**& they are computationally
expensive**

So, optimizing your JOINS
are crucial for efficiency.



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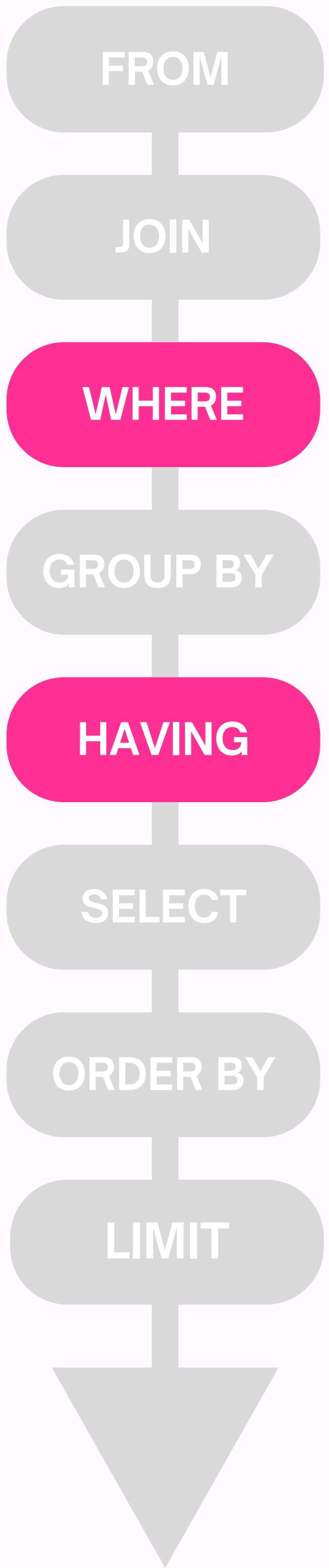
tips for optimizing your JOINS

1. Order your JOINs to start with the **smallest** dataset that gets **increasingly larger**.
2. Ensure joined columns are **indexed** for faster matching.
3. Use **ON clauses** to reduce the joined dataset size early in the process.

Optimize the **WHERE** clause

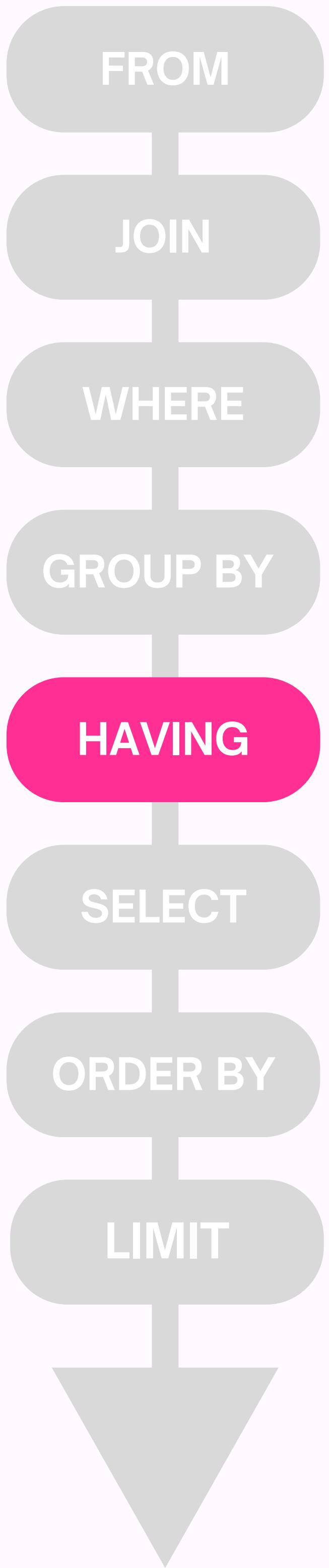
since filtering happens early.
in the execution process

Use **indexed** columns in the WHERE
clause, whenever possible.



**Use WHERE instead
of HAVING
(if possible)**

WHERE gets executed before HAVING,
so put filters in the WHERE clause for
better efficiency.



Avoid filtering on HAVING (if possible)

Reserve HAVING for filtering only aggregated data, as it's processed after GROUP BY.

**Finally, make sure to
reduce redundancies**

BE SELECTIVE IN YOUR SELECT

Only SELECT the columns you need, as
this can impact performance



**Especially when
dealing with very
wide datasets**

**Remove any unnecessary
ORDER BY clauses.**

That's all.

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