

# Database Query Optimization


QA: The query is slow.

Engineers: Let's scale up the database.

Tech Lead & CTO: 🤖

# About Me



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- Head of Platform Engineering @Baania
- Often known as DevSecMLFinDataOps
- Also reduce monthly cloud bills by \$6k USD
- And we can do so much more if we're being smart with our SQL queries 🕶️

# What can go wrong

```
SELECT *  
FROM crm  
WHERE register_date > '2020-01-01'  
      AND is_priority=true  
      AND (  
          segment LIKE 'foo'  
          OR segment LIKE 'bar'  
      )  
ORDER BY register_date  
LIMIT 10;
```

# What can go wrong - JOIN edition

```
SELECT *  
FROM products as p  
JOIN stock as s  
      ON p.product_id=s.product_id  
LIMIT 10;
```

# Index types

## B-Tree

- default index
- also works with partial string matching
- can also add sort order for `ORDER BY` clause

## BRIN

- suited for date range filters

## GIST

- suited for spatial data

## GIN

- suited for full text search operations

# What can be improved?

- Select only required columns
- Don't use `ORDER BY` when not necessary
- If it's exact matching, do not use `LIKE`, since this is partial matching, which is more taxing
- Always filter before performing `JOIN`
- Add indexes
  - Use appropriate index type per column data type / query pattern