

MODULE 2 DATABASE PROGRAMMING

Aggregates and Subqueries



ELEVATE

YESTERDAY...

What is a **database**?

A database is made up of what?

Each column represents...

Each row represents....

How do we get data out of the database?

What if we want to filter the results?



SELECT to get data



SO BORING



AVGERAGE (AVG)

- **SYNTAX:** AVG([column])

```
SELECT AVG(length_minutes) AS 'Average Movie Length' FROM  
movie
```



SUM

- **SYNTAX:** SUM([column])

```
select sum(length_minutes) from movie
```

COUNT

- **SYNTAX:** COUNT([column])

select **count(title)** from movie where length_minutes > 120



MINIMUM AND MAXIMUM

- **SYNTAX:** MIN([column])
MAX([column])

select **max(length_minutes)** as Longest, **min(length_minutes)** as Shortest from movie

AGGREGATE FUNCTIONS

- **AVG** returns the average value of a numeric column
- **SUM** returns the total sum of a numeric column
- **COUNT** returns the number of rows matching criteria
- **MIN** returns the smallest value of the selected column
- **MAX** returns the largest value of the selected column



GROUP BY

- Group records into summary rows and return one record for each group
- Can be used when applying aggregate functions

SYNTAX:

```
SELECT expression1, expression2, ... expression_n, aggregate_function  
FROM tables [where condition_expression]  
GROUP BY expression1, expression2, ... expression_n  
ORDER BY expression1;
```

CONCATENATING

- Java uses + to concatenate:

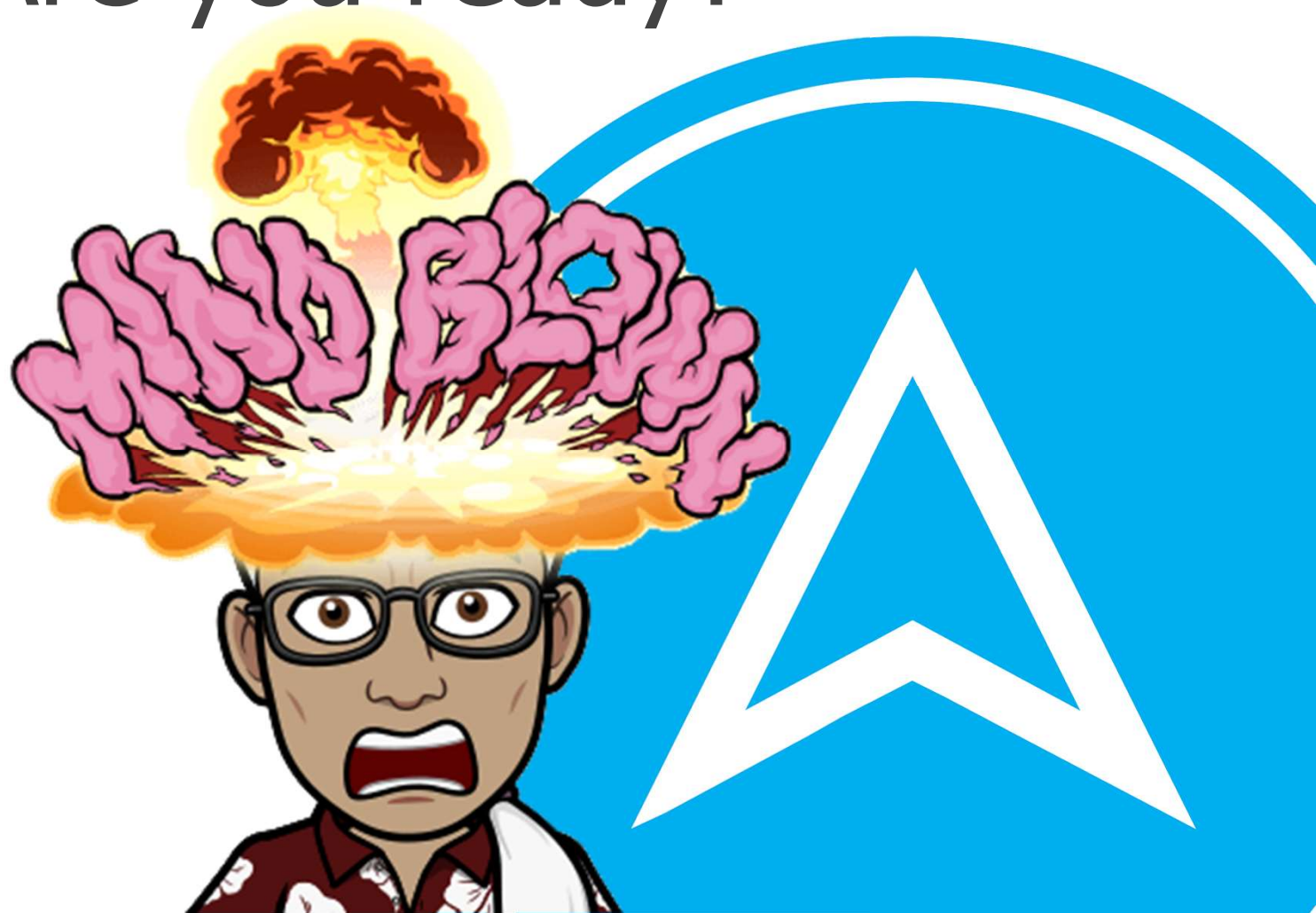
```
String name = "Henry" + " " + "Edwards";
```

- Postgres uses || to concatenate

```
SELECT city_name || ', ' || state_abbreviation  
from city;
```



Are you ready?





SUBQUERIES

- You can use queries *within* queries

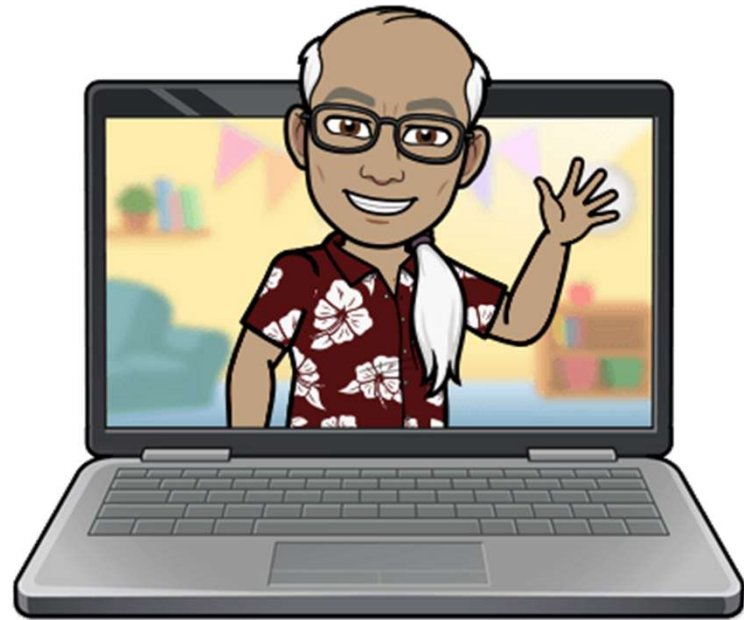
```
select * from customer where customer_id IN(select customer_id from sale where is_delivery);
```

SUBQUERIES

- Subqueries can only return **one column**
 - **select customer_id from customer where last_name_name like 'A%';** 
 - **select * from customer where last_name_name like 'A%';** 
- Most frequently used in **Where clauses** (and more on day 4)
- Can be used with the keyword **IN** or **NOT IN**



LET'S CODE!



WHAT QUESTIONS DO YOU HAVE?



Reading for tonight:
SQL Joins

