

Module 2 - Lecture 2

# Introduction to ordering, grouping, and other functions



# REVIEW

- Databases
  - What they good for?
  - What is the type we are going to be using?
- SQL
  - DDL
  - DML
  - DCL
- PostgreSQL & pgAdmin
- SELECT statements



# Ordering Results

A result set can be sorted using the **ORDER BY** syntax.

- Sort columns must exist in the table being queried or can be aliased columns.
- Multiple column names can be provided which assigns a priority sort

```
SELECT    column1, column2
FROM      table
ORDER BY column1 [ASC | DESC],
           column2 [ASC | DESC];
```



# Limiting Results

A result set can be limited to  $N$  results using the **LIMIT** syntax.

```
SELECT    column1, column2  
FROM      table  
LIMIT     { number | ALL } ;
```



# String Concatenation

We can concatenate the values across multiple columns into a single field.

- This is done with the || operator. NOTE: this is different than OR.

```
SELECT      (column1 || ', ' || column2)
FROM        table;
```



# Aggregate Functions

We can aggregate the values across multiple rows into a single result.

- **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

```
SELECT AVG (expression) FROM table;
```



# Other Functions

- **ABS** returns the absolute value of a numeric result



# Grouping Results

Grouping data is the process of combining columns with duplicate values.

- The **GROUP BY** clause can be used in conjunction with a SELECT statement and aggregate functions to collect data across multiple records.

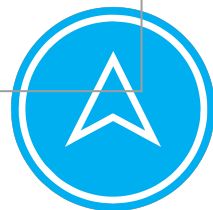
```
SELECT      column1, AVG (expression)  
FROM        table  
[WHERE]      [...]  
GROUP BY    column1;
```





# Lexical vs Logical Order of Select Queries

Lexical	Logical
<b>SELECT</b> <b>FROM/JOIN</b> <b>WHERE</b> <b>GROUP BY</b> <b>HAVING</b> <b>UNION</b> <b>ORDER BY</b> <b>LIMIT/OFFSET</b>	<b>FROM/JOIN</b> <b>WHERE</b> <b>GROUP BY</b> <b>HAVING</b> <b>SELECT</b> <b>UNION</b> <b>ORDER BY</b> <b>LIMIT/OFFSET</b>



QUESTIONS?

