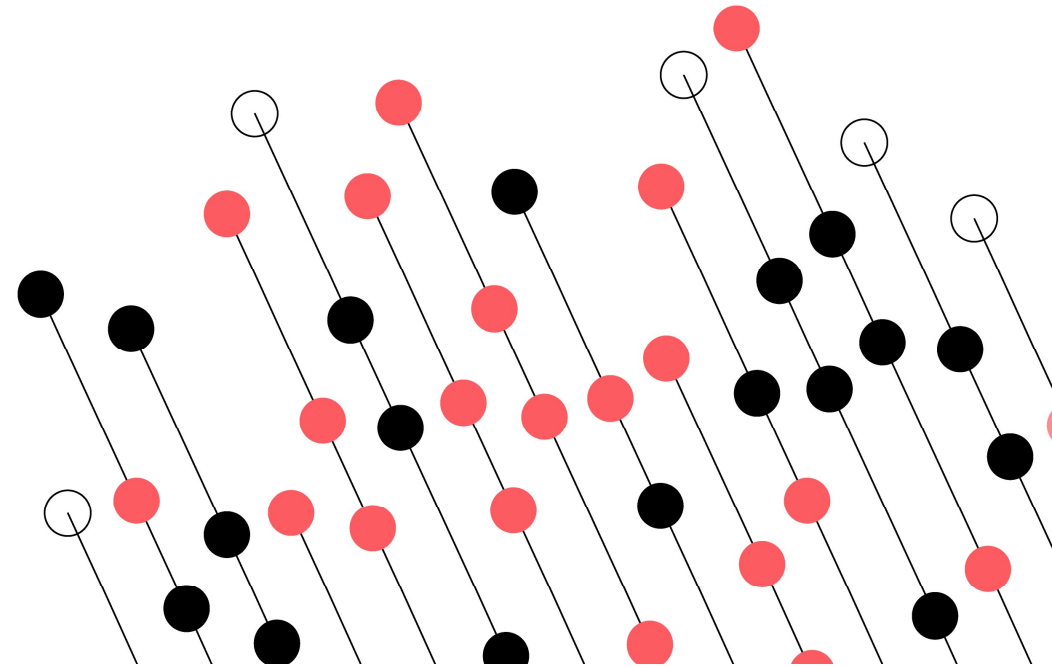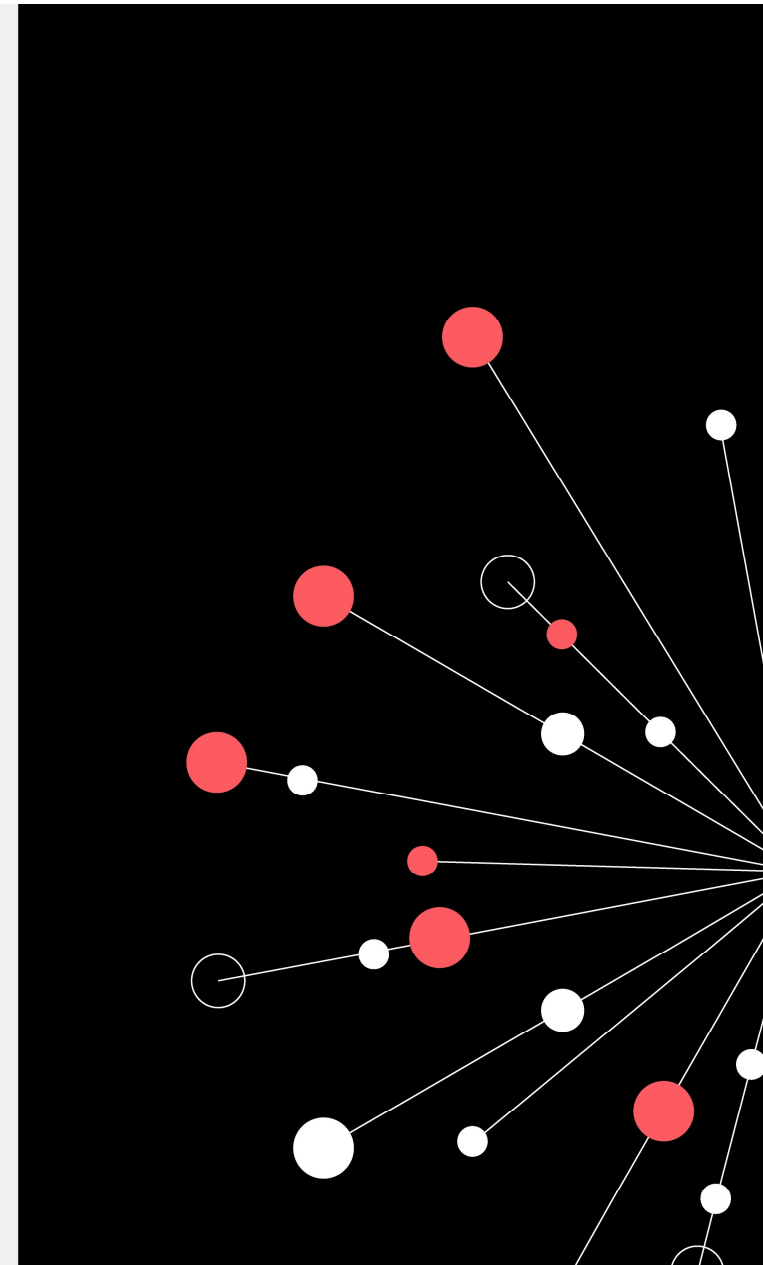# SQL:
Retrieve Data

SQL

Contents
- Filtering columns
- Calculated columns
- Aliases

QA

SELECT statement

SELECT <<field(s)>>

FROM <<table(s)>>

WHERE <<condition(s)>>

GROUP BY <<field(s)>>

HAVING <<condition(s)>>
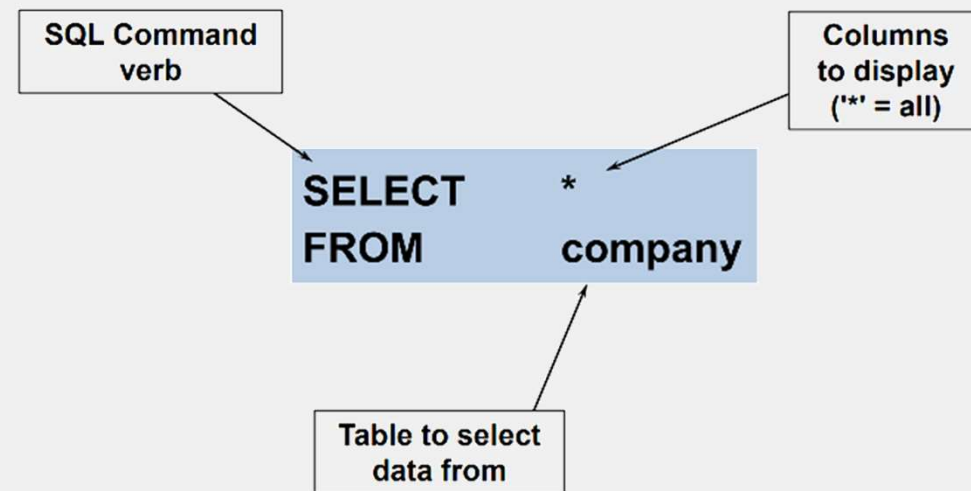
ORDER BY <<field(s)>>

Use the provided script in file CreateQAStore.sql to create the QAStore database.

QA

SELECT statement format

- Use new lines, tab keys and indentation to make code readable.

- White space is ignored by the parser.

- Make use of comments, ignored by runtime engine.

- Case insensitive.

Modify the SELECT statement to display only columns company_no, name and county from table company.
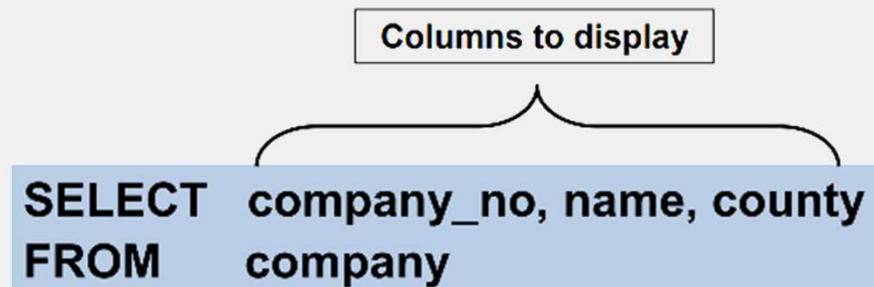
Specifying columns

- List the columns comma-separated.

- Columns may be listed in any order, but that is the order they are displayed left-to-right.

What if we need to display a column derived from the existing columns?

Display column lname and a column with values 20% higher than sales_target from table salesperson. Call that column 'Next Year'.
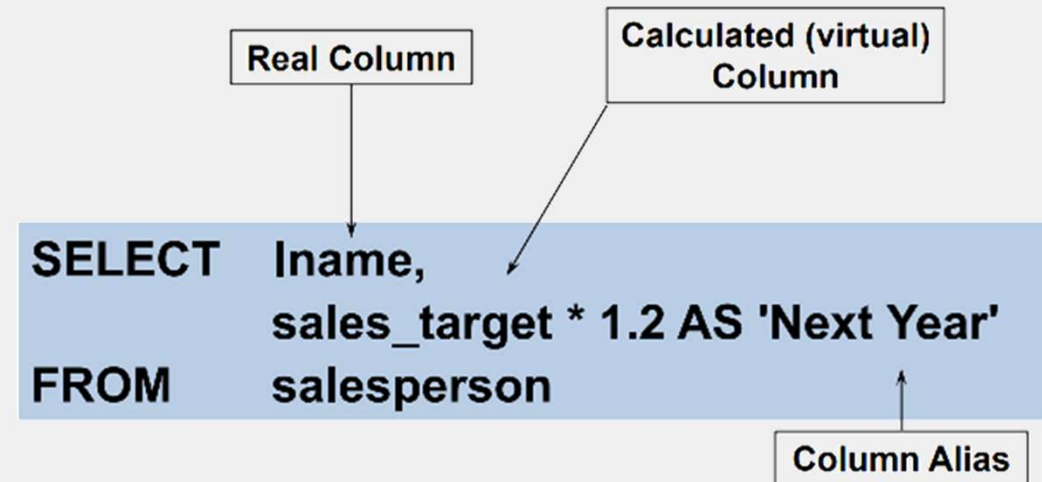
Columns to display

```
SELECT   company_no, name, county
FROM     company
```

Calculated columns and aliases

- **The 'AS' word can be omitted.**
  - ❖ Beware the risk of errors – if the comma between two column names is omitted, only the first will be displayed, and it will be named after the second (considered an alias).

- **The quotes can be omitted if there are no spaces in the alias name.**

Real Column

Calculated (virtual) Column

```
SELECT    Iname,
          sales_target * 1.2 AS 'Next Year'
FROM      salesperson
```

Column Alias

Operators in calculated columns

TYPE	OPERATORS
Arithmetic operators	+ - * / % *e.g., UnitsInStock + UnitsOnOrder*
String concatenation operator	+ *e.g., FirstName + ' ' + LastName*

Operations precedence

When creating calculated columns, remember the BODMAS rules in mathematics. They are followed by SQL too.

B – Brackets first

O – Orders (powers, square roots, etc.)

DM – Division and **M**ultiplication (left to right)

AS – Addition and **S**ubtraction (left to right)

- **Division and multiplication rank equally.**
- **Addition and subtraction rank equally.**

QA

Selecting distinct values

Display the list of department numbers from column dept_no of table salesperson. No repetitions please!

Now use the provided script in file Northwind.sql to create the Northwind database.

Display the list of cities from table customers. No repetitions please! But beware of the potential trap!

SELECT DISTINCT

emp_no	dept_no	sales_target
10	1	23000
20	3	34500
30	2	12000
40	3	36900
50	1	12780
60	3	12650

salesperson

**SELECT DISTINCT dept_no
FROM   salesperson**

result

dept_no
1
2
3

SELECT DISTINCT outputs only unique rows to the result set:

QA

Fix these

The following queries from the Northwind database don't run or produce unexpected results. Correct the errors.

```
SELECT * FROM Category
```

```
SELECT CategoryName Description FROM Categories
```

```
SELECT ProductID, ProductName,
UnitsInStock+UnitsOnOrder*UnitPrice AS Revenue
FROM Products
```