
School and Pool for Digital Talent

# Why learn SQL?

Why?

- Most of (large) data is stored in relational databases
- Being able to access and unlock insights is an essential skill for data analysts

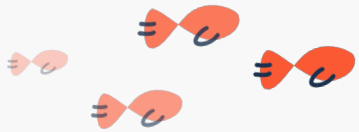
What?

- Learn how to use SQL!

How?

- Learn SQL syntax and concepts
- Write SQL! Practice, practice, practice!

# Introduction to SQL



# SQL - Structured Query Language

- SQL stands for **S**tructured **Q**uery **L**anguage and lets you access and manipulate databases
- It became a standard of the American National Standards Institute (ANSI) in 1986, and of the International Organization for Standardization (ISO) in 1987
- The standard language for **Relational Database Management Systems (RDBMS)**
- Its syntax can be different across database types but they all support the major commands in a similar manner

https://www.w3schools.com/sql/sql_intro.asp

# DDL, DML & DCL

- **Data Definition Language (DDL)** - Manage DB and Table Structure
- **Data Manipulation Language (DML)** - Manage Table Contents
- **Data Control Language (DCL)** - Manage Access

# What can SQL do?

SQL can

- create new databases
- create new tables in a database
- create stored procedures in a database
- create views in a database
- execute queries against a database
- retrieve data from a database
- insert records in a database
- update records in a database
- delete records from a database
- set permissions on tables, procedures, and views

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# Today with SQL

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# Your (maybe) first SQL query

In DBeaver go to File > Open File
Then search for and open: 6_2_Introduction_to_SQL_Lecture.sql

In the new window on the click on the text under
'Your first SQL query':

```
SELECT name
FROM airports;
```

Now press **<CTRL> + <RETURN>**
and check out the output that was generated below.

Congratulations you just ran your first SQL query!
(Okay, maybe.)

# Syntax

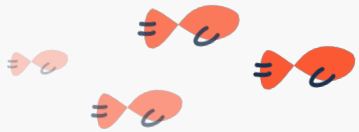
- SQL is structured similar to the English language

  **SELECT** name
  **FROM** airports;

- Each table is identified by its name
- SQL keywords are NOT case sensitive: **select = SELECT**
- Important: Some databases allow more than one SQL statement to be executed, therefore it's the standard way to separate each SQL statement with a semicolon **;**

https://www.w3schools.com/sql/sql_syntax.asp

# SELECTing Data



# SELECT FROM

Select multiple columns

```
SELECT column1,
       column2, ...
FROM table_name;
```

Select all columns

```
SELECT *
FROM table_name;
```

# SELECT DISTINCT

```
SELECT DISTINCT column_names(s)
FROM table_name;
```

- Columns often contain duplicate values
- DISTINCT returns only distinct (=unique) values

# COUNTing rows

```
SELECT COUNT(*)
FROM table_name;
```

- Understand size of table
- replace * with <column_name> to count **non-null** values in a column

# LIMIT

```
SELECT column_names(s)
FROM table_name
LIMIT number;
```

- Databases often contain tables with huge amounts of columns and rows
- By default SQL tries to retrieve all the rows it can find in a table
- The bigger the table, the longer it takes to retrieve its data, therefore always LIMIT your data to only a few rows

DBeaver limits the result to 200 rows by default

# Now try on your own

- Open file:  6_2_Introduction_to_SQL_Exercises.sql
- Answer questions 1 - 3.2
- Stop!

Timeframe: 30 minutes