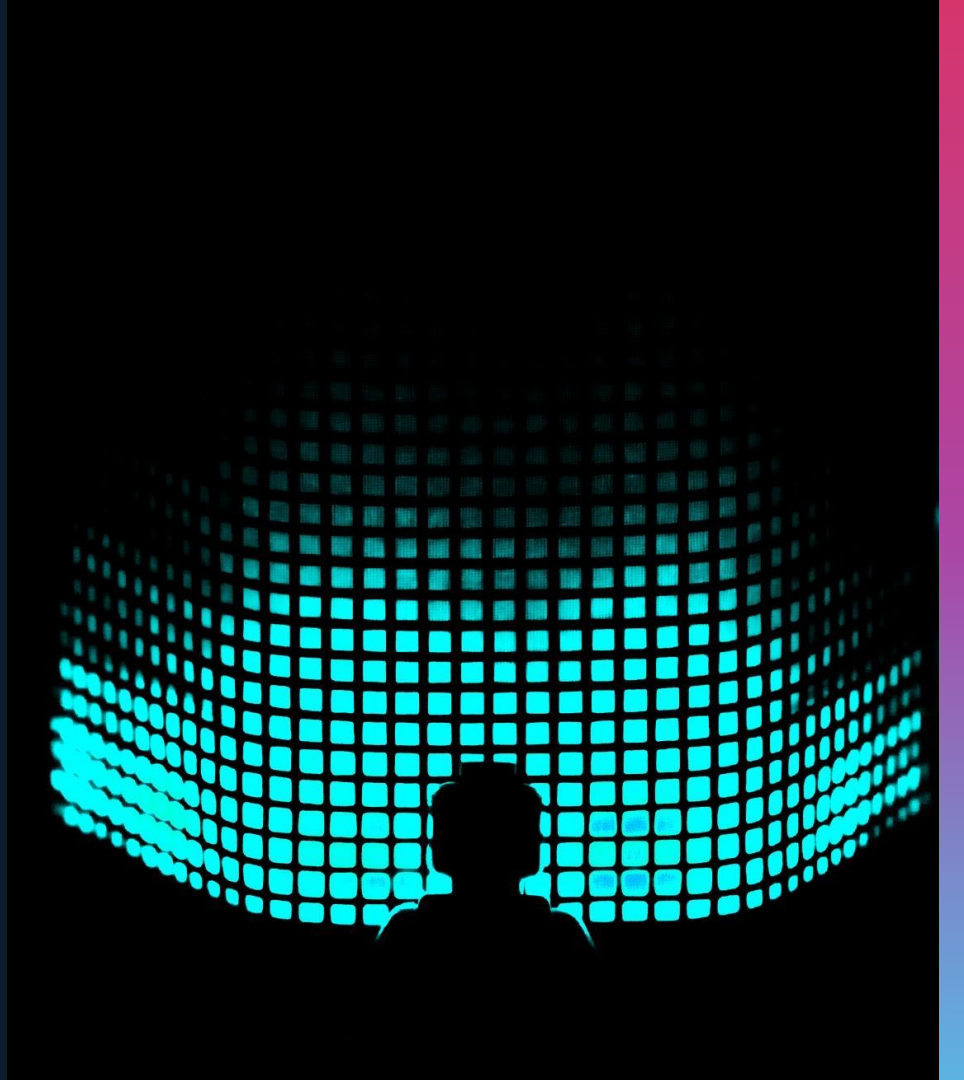

WeCloudData
SQL Fundamentals
Kick off your career in data science & analytics

Module 1 :
Introduction to Data and Databases

Learning Objectives

In this module, we will introduce SQL as a programming language for managing databases. Specifically, we will share with you:

- What is SQL
- Why we need to learn SQL
- What we can achieve with SQL



What is Data?

What is a Database?

Agenda.

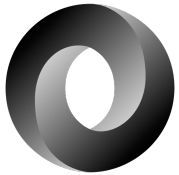
What is Data?

Introduction to SQL

Data are a set of values about one or more persons or objects. There are three types:

wikipedia

Structured



Semi-Structured

Unstructured

Reference: Data Types: Structured vs. Unstructured Data

Storing Data (Structured)

Introduction to SQL

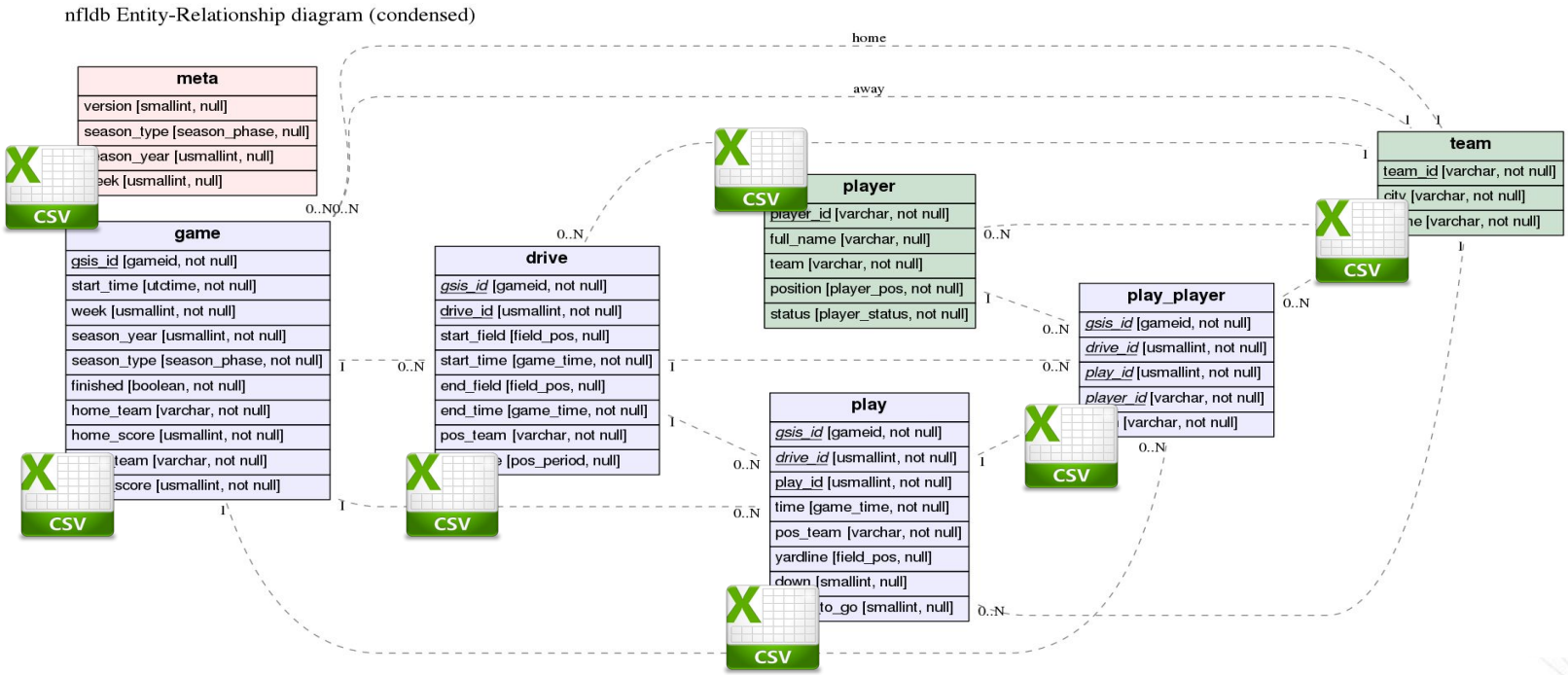
1, 000, 000 rows

1, 000, 000, 000 rows

What can we do if there's more data we want to store than what the program allows for?

Storing Data (Vlookup?)

Introduction to SQL



What is Data?

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What is a Database?

Introduction to SQL

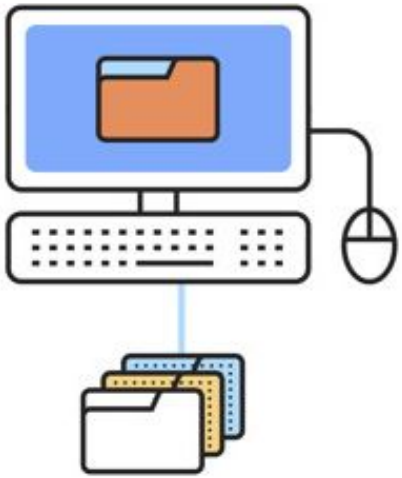


Image: Background vector created by rawpixel.com - www.freepik.com

A **database** is an organized collection of data. It is a collection of **schemas, tables, queries, reports, views, and other objects**.

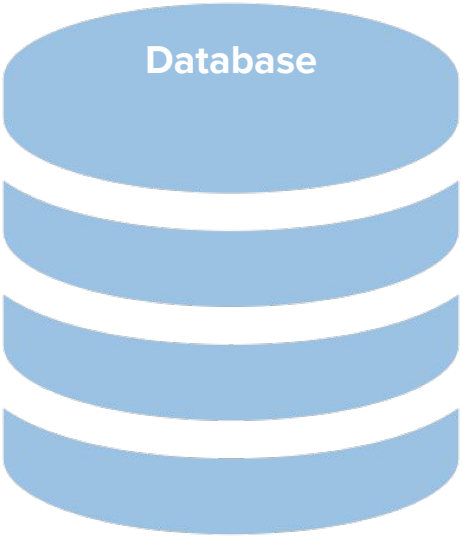
Database designers typically organize the data to model aspects of reality in a way that supports processes requiring information.

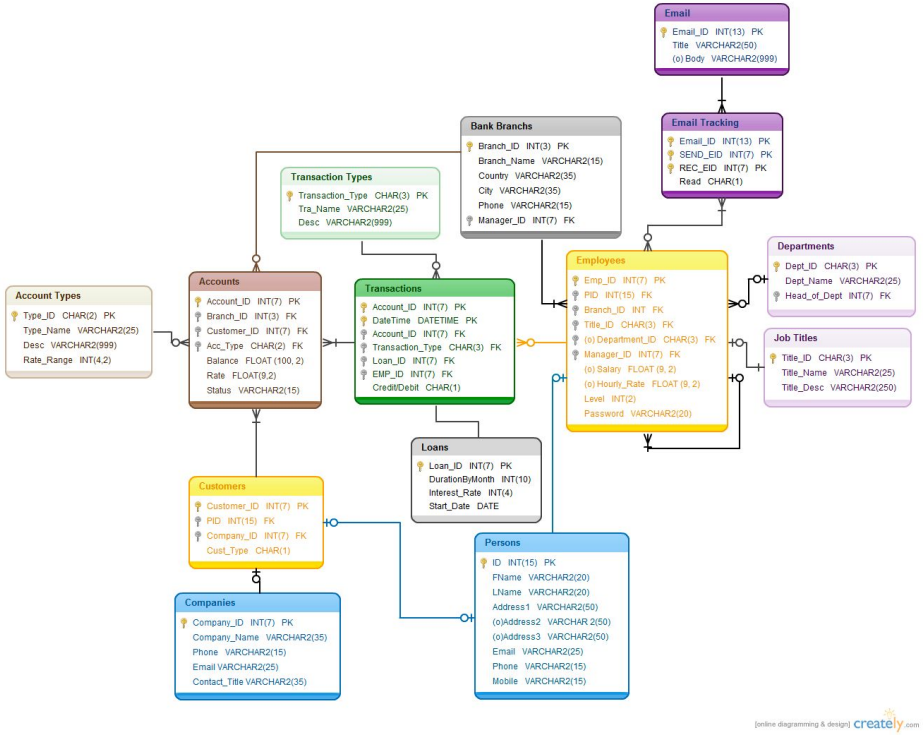
E.g. Modelling the availability of rooms in hotels in a way that supports finding a hotel with vacancies.

wikipedia

Storing Data (Databases)

Introduction to SQL





Types of Databases

Introduction to SQL

Relational

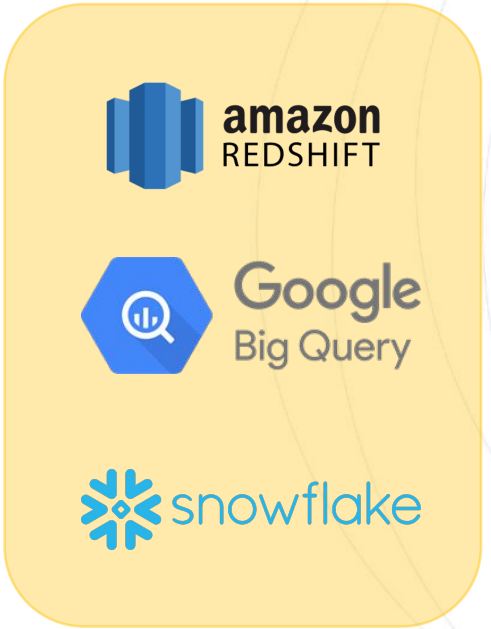
Tend to be larger, monolithic

Non-relational

Newer field, lots of players

Relational Databases

Introduction to SQL



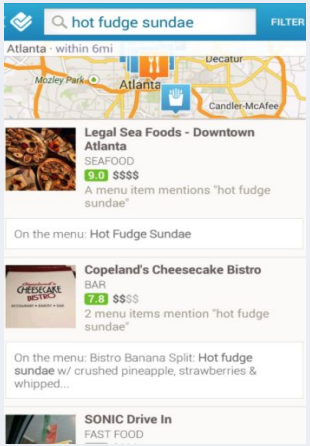
NoSQL Databases

Introduction to SQL

Document Database

Pair each key with a complex data structure known as a document

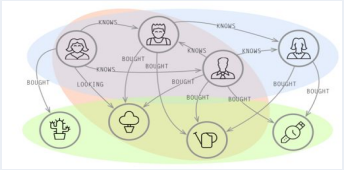
mongoDB.



Graph Database

Storing graphs to model relationships and dependencies

neo4j TigerGraph



Key-value Store

Collections of key-value pairs

redis

Column-family

Wide-column stores that are optimized for queries over large datasets

cassandra APACHE HBASE

Search Engine DB

Full-text search

Apache Solr elasticsearch