MySQL

**DB** is any collection of related data like a shopping list, your friends…etc. And can be stored in different ways [ on paper, in your mind, on your computer “**the most common use case**”]

Computers are great at keeping track of large amount of information

زي Amazon.com بيحتاج متابعة البيانات بشكل مستمر والتغييرات اللي بتحصل وتسجيل العملاء والأرباح والطلبات وملايين البيانات اللي بتضاف كل فترة والداتا اللي بتخزنها امازون valuable, critical secured and

**So** we use DBMS (Database management system): a special SW program that create and maintain a database making it easy to manage amounts of information

**CRUD** → the four main operations in DB

*There are two types of DB*

* Rational DB (SQL)

Organize data into one or more tables each one has columns and rows, and a unique key identifies each row

* Non-rational (NoSQL/ not just SQL)

Organize data in anything but a traditional table [graphs, documents,key value hash,..]

Structure Query Language (SQL): standardized language for interacting with RDBMS, to perform CRUD**,** define tables and structures

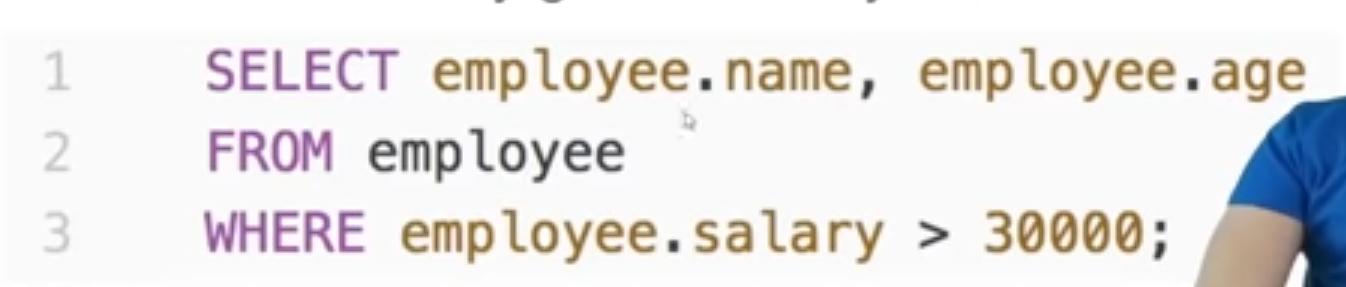
DB Queries

Requests made to the data management system for specific information

كلما كانت DB معقدة وكبيرة كلما زادت صعوبة الوصول لجزء معين من المعلومات اللي احنا عاوزينها

A google search is a query

### A query is a set of instruction given to the RDBMS that tell what info you want it to retrieve for you



Tables and keys

زي ما قولنا فوق الـ table عبارة عن صفوف و أعمدة كل عمود بيعبر عن single attribute وكل صف بيعبر عن entry or a value of attribute

**Primary key**: uniquely identify the specific row and must contain UNIQUE values {num, string ,any type}, and cannot contain NULL values.

فيه نوعين من الـ primary key

* Surrogate key also called a synthetic primary key, is generated when a new record is inserted into a table automatically by a database والنوع دا ملوش وجود في العالم الحقيقي وملوش دلالة على عكس النوع الثاني زي مثلا ترتيب ا و ترقيم
* Natural key is a type of unique key in a database formed of attributes that exist and are used in the external world outside the database. ex. SSN ,ID

**Foreign key**: an attribute that links another database table and refers to the primary key of another table .

دا بيعرفنا ايه الـ relationships اللي بين الجداول

**Composite key**:is a combination of two or more columns in a table that can be used to uniquely identify each row in the table.

زي first\_name and last\_name واستخدام تاني لما نضيف اتنين foreign keys مع بعض في جدول معين بيكونوا primary key للجدول دا

SQL basics

SQL is a hybrid language it's basically 4 types of languages in one

1. **Data query language (DQL)**

Used to query the DB for info and get the info that already stored there

1. **Data definition language(DDL)**

Used for defining the DB schema (the overall layout of DB)

1. **Data control language (DCL)**

Used for controlling access to the data and user & permissions management

1. **Data manipulation language (DML)**

Used for inserting ,updating,deleting from the DB