What is SQL?

- Computer Language used for
  - Storing
  - Manipulating
  - Retrieving Data
- Invented by IBM
- SQL stands for Structured Query Language

Why SQL?

- Controlled Access
- Data Manipulation
- Business Insights

Who uses SQL?

- Software Developers
- Database Managers
- Business Managers

DBMS (Database Management Systems)

- It allows creation of new DB and their data structures
- Allows modification of data
- Allows retrieval of Data
- Allows Storage over long period of time
- Enables recovery in times of failure
- Control access to users

SQL Queries

1. DDL Data Definition Language
   CREATE, ALTER, DROP
2. DML Data Manipulation Language
   INSERT, UPDATE, DELETE
3. DQL Data Query Language
   SELECT, ORDER BY, GROUP BY
4. DCL Data Control Language
   GRANT, REVOKE
5. TCC Transactional Control Commands
   COMMIT, ROLLBACK

Constraints

- NOT NULL Constraint: Ensures that a column cannot have NULL value.
- DEFAULT Constraint: Provides a default value for a column when none is specified.
- UNIQUE Constraint: Ensures that all values in a column are different.
- CHECK Constraint: Makes sure that all values in a column satisfy certain criteria.
- Primary Key Constraint: Used to uniquely identify a row in the table.
- Foreign Key Constraint: Used to ensure referential integrity of the data.

Keys

- A primary key is used to uniquely identify each row in a table
- A primary key can consist of one or more columns on a table.
- When multiple columns are used as a primary key, they are called a composite key.
- A foreign key is a column (or columns) that references a column (most often the primary key) of another table
- The purpose of the foreign key is to ensure referential integrity of the data.

Primary Key

- Primary key consists of one or more columns
- Used to uniquely identify each row in the table
- No value in the columns can be blank or NULL

PostgreSQL

- PostgreSQL is an advanced object relational database management system that supports an extended subset of the SQL standard, including transactions, foreign keys, subqueries, triggers, user defined types and functions

Companies using PostgreSQL

- Instagram
- Netflix
- Spotify
- Uber Technologies
- Reddit
- Instacart

Why PostgreSQL?

- Completely Open source
- Complete ACID Compliance
- Comprehensive documentation and active discussion forums
- PostgreSQL performance is utilized best in systems requiring execution of complex queries
- PostgreSQL is best suited for Data Warehousing and data analysis applications that require fast read/write speeds
- Supported by all major cloud service providers, including Amazon, Google, & Microsoft