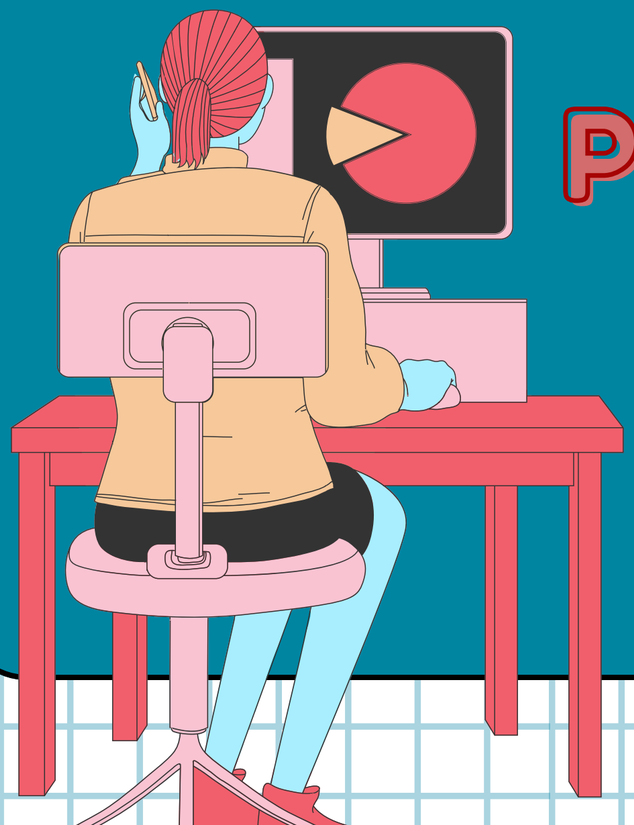
Structured Query Language



Part-1

A Lecture Presentation

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WHAT IS SQL

SQL (Structured Query Language) is a programming language used to manage and query relational databases. It allows users to retrieve, insert, update, and delete data from tables. SQL also enables the creation and modification of database structures, such as tables and indexes.

HOW DO I PRONOUNCE SQL?

SQL can be pronounced in two common ways:

"Ess-Queue-Ell" or "S-Q-L" – Spelling out the letters, often used formally or in academia.

"Sequel" – A shorthand pronunciation, popular in the tech industry.

HISTORY AND EVOLUTION OF SQL

SQL originated in the 1970s from IBM's SEQUEL, designed to interact with relational databases based on Edgar F. Codd's model. It was standardized by ANSI in 1986, leading to widespread adoption in RDBMS like Oracle and MySQL. Over time, SQL evolved with advanced features and remains integral to modern data management and analysis.

POPULAR SQL DATABASES

MySQL, known for web applications, and **PostgreSQL**, valued for its advanced features and reliability. **Microsoft SQL Server** integrates well with Windows systems, while **Oracle Database** is preferred for large-scale enterprise applications. **SQLite** is lightweight and ideal for mobile apps, while **MariaDB** offers an open-source alternative to MySQL. Cloud options like **Google BigQuery** and **Amazon RDS** are also widely used for scalability and big data.

WHAT'S A DATABASE?

A **database** is a system that stores and organizes data for easy access, management, and updating. It typically uses tables, which are made up of rows and columns, to structure the data. Databases allow efficient querying and manipulation of data using tools like SQL. A **Database Management System (DBMS)** helps manage and secure the database. Databases are used in various applications, such as websites, business systems, and mobile apps, to store information like customer data, transactions, and more.

DATA, INFORMATION, DATASET

- **Data** refers to raw facts and figures that alone may not have meaning, such as numbers, text, or symbols (e.g., "25," "John," "2024-11-18").
- **Information** is processed or organized data that has meaning or context, such as "John is 25 years old" or "The event occurred on November 18, 2024." It helps make sense of raw data.
- A **Dataset** is a collection of related data, often organized in rows and columns (like a table), which can be analyzed or processed. It can contain various data points, such as a list of customer names, ages, and addresses.