Introduction to databases

MYSQL, POSTGRESQL AND SQL SERVER

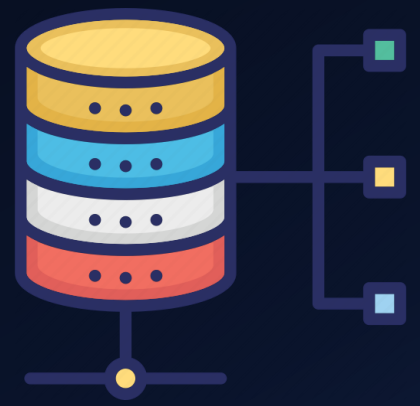

TYPES OF DATABASES
USE OF DATABASES
ADVANTAGES OF DATABASES
PURPOSE OF DATABASES
DISADVANTAGES OF DATABASES
DATABASES
WHAT IS DATABASE?
THANKYOU

- **What is a Database?**

A *database* is a set of data stored in a computer. This data is usually structured in a way that makes the data easily accessible.

- **What is a Relational Database?**

A *relational database* is a type of database. It uses a structure that allows us to identify and access data *in relation* to another piece of data in the database. Often, data in a relational database is organized into tables.



- **Tables: Rows and Columns**

Tables can have hundreds, thousands, sometimes even millions of rows of data. These rows are often called records.
Tables can also have many columns of data. Columns are labeled with a descriptive name (say, age for example) and have a specific data type.
For example, a column called age may have a type of INTEGER (denoting the type of data it is meant to hold).

name	age	country
Natalia	11	Iceland
Ned	6	New York
Zenas	14	Ireland
Laura	8	Kenya

In the table above, there are three columns (name, age, and country).
The name and country columns store string data types, whereas age stores integer data types.
The table also has four rows, or records, in it (one each for Natalia, Ned, Zenas, and Laura).

- **What is a Relational Database Management System (RDBMS)?**

A relational database management system (RDBMS) is a program that allows you to create, update, and administer a relational database. Most relational database management systems use the SQL language to access the database.

What is SQL?

- SQL (**S**tructured **Q**uery **L**anguage) is a programming language used to communicate with data stored in a relational database management system. SQL syntax is similar to the English language, which makes it relatively easy to write, read, and interpret.
- Many RDBMSs use SQL (and variations of SQL) to access the data in tables. For example, SQLite is a relational database management system. SQLite contains a minimal set of SQL commands (which are the same across all RDBMSs). Other RDBMSs may use other variants.
- (SQL is often pronounced in one of two ways. You can pronounce it by speaking each letter individually like “S-Q-L”, or pronounce it using the word “sequel”.)

- **Popular Relational Database Management Systems**

SQL syntax may differ slightly depending on which RDBMS you are using. Here is a description of the 3 most popular RDBMSs:

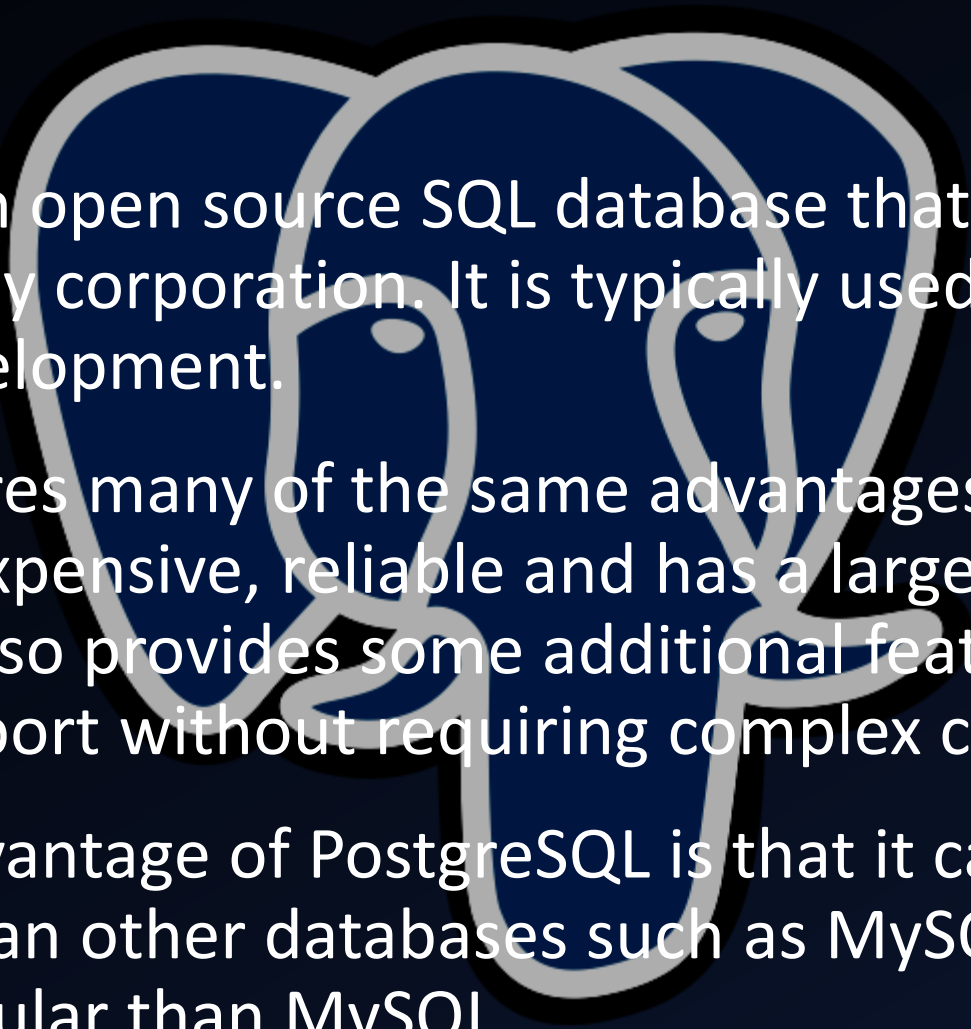
- **MySQL**

MySQL is the most popular open source SQL database. It is typically used for web application development, and often accessed using PHP.

The main advantages of MySQL are that it is easy to use, inexpensive, reliable (has been around since 1995), and has a large community of developers who can help answer questions.

Some of the disadvantages are that it has been known to suffer from poor performance when scaling, open source development has lagged since Oracle has taken control of MySQL, and it does not include some advanced features that developers may be used to.

- PostgreSQL

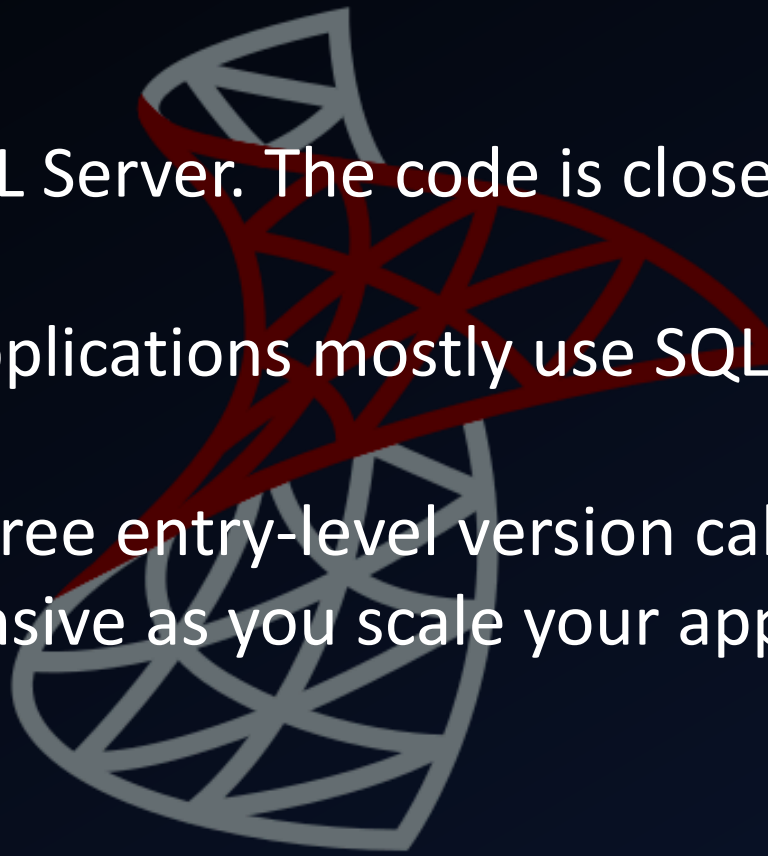


PostgreSQL is an open source SQL database that is not controlled by any corporation. It is typically used for web application development.

PostgreSQL shares many of the same advantages of MySQL. It is easy to use, inexpensive, reliable and has a large community of developers. It also provides some additional features such as foreign key support without requiring complex configuration.

The main disadvantage of PostgreSQL is that it can be slower in performance than other databases such as MySQL. It is also slightly less popular than MySQL.

- **SQL Server**



Microsoft owns SQL Server. The code is close sourced.

Large enterprise applications mostly use SQL Server.

Microsoft offers a free entry-level version called Express but can become very expensive as you scale your application.

Difference between MySQL, PostgreSQL and SQL Server

MYSQL

- MySQL is owned by Oracle.
- MySql supports programming languages like C++, Java and has running support for Perl, TCL and Haskel.
- MySql needs less amount of operational storage space.
- MySql does not support midway query execution cancellation.
- MySQL blocks the database while taking the backup.
- MySQL is free to use.
- Data file can be manipulated while running.

POSTGRESQL

- Provides support to different functions of SQL.
- Views can be updated but not automatically .
- Doesn’t provide computed columns.
- Replication is in form of reports and is supposed to be least polished of the bunch
- There is no need to create a dl first
- Provides dynamic actions
- Doesn’t provide facility to run materialized view.
- Is case sensitive by default.

SQL SERVER

- SQL Server is developed by Microsoft.
- SQL Server supports programming languages like C++, Java, Ruby, Visual Basic, Delphi, R.
- SQL Server needs large amount of operational storage space.
- SQL Server allows canceling query execution midways.
- SQL Server does not block the database during backup process.
- SQL Server is costly.
- Data file manipulation is not allowed under security consideration while running.
- Enterprise, Standard, Web, Workgroup, or Express.


THANK YOU