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***MINI 1***

**Topic 1: What is a database? What makes it different from any other sort of file? What different “kinds” of databases are there? What are the key features of a database?**

**3 URLs**

1. <http://searchsqlserver.techtarget.com/definition/database>
2. <http://www.my-project-management-expert.com/different-types-of-databases.html>
3. <https://www.tutorialcup.com/dbms/db-characteristics.htm>

**Precis of Sources**

A database is a collection of data, or information, that is organized in a way to be easily accessible, manageable, and updatable. The data in a database is organized into rows, columns, and tables. The key features of a database are its ability to be updated and expanded. Along with this, databases support multiple uses as well as delegating certain access permission to a user. This is helpful in companies where a company doesn’t want non-IT employees to alter the code or queries of a database but still maintain read or write permission to the data in the database.

There are nine different types of databases I found:

1. Relational Databases
2. Operational Databases
3. Database Warehouses
4. Distributed Databases
5. End-user databases
6. Cloud Databases
7. NoSQL Databases
8. Object-oriented Databases
9. Graph Databases

Relational databases are the focus for this precis. A Relational database has multiple tables, each defined with a key field, allowing a table to connect with another table. The relational database is used the most throughout most industries and is the primary database used in the company I will be interning with, for example. Relational databases use SQL and are easy to extend and add new data categories even after the original database creation date.

**Summary of Topic**

A database is a clean way to collect and store information, much like an Excel spreadsheet, but offer wider possibilities. Databases allow for updates to the data base, extensions on the database, and removing data from a database easily and with code. A database comes in many shapes and sizes, with the most common being a relational database allowing for insights to relationships between data and tables. A new and database that I know the company I am interning for is trying to shift to is a cloud database to have information securely stored in the cloud. This also prevents the company from needing to house all their data and servers in their office complex or in the state and instead have a nationwide hub where the database is stored. They’ve even mentioned trying cloud services through Microsoft I believe.

**JIT 1**

Which types of databases will we primarily be focusing on in this course?

**Topic 2: What is SQL? We will have discussed what it stands for, but you are being asked to try to figure out what it is used for and what makes it different or unique from any other “language.”**

**3 URLs**

1. <https://www.w3schools.com/sql/sql_intro.asp>
2. <https://www.ntchosting.com/encyclopedia/databases/structured-query-language/>
3. <http://www.guru99.com/introduction-to-database-sql.html>

**Precis of Sources**

SQL stands for Structured Query Language and is an American National Standards Institute standard. SQL lets you access and manipulate databases that allow for SQL. SQL can execute queries against a database, retrieve data from a database, it can insert, update and delete records in a database. It can also create new databases as well as new tables in a database. SQL can create stored procedures in a database, set permissions on tables, procedures, and make views in a database as well as set permission on those views in the database.

SQL is unique from other languages because it is used for relational databases. Unlike NoSQL, SQL databases have mature storage and management models and with the views feature, it allows to set authorizations on what people can see; perfect for a business or enterprise environment. SQL also supports better security models as opposed to NoSQL databases. SQL databases also support stored procedure SQL allowing developers to implement the business logic into the database. SQL, however, does not allow for scaling. With the advent of data giants such as Google and Facebook, NoSQL has become important because SQL databases slow down at such massive sizes.

**Summary of Topic**

SQL is a language used to implement, manage, and maintain relational databases. SQL is a standard and supports all the operations a developer could ever want to use on a database. SQL allows for easy updates to a database as well as creations of entirely new tables, views or data sets within the database. SQL supports the ideas of views which allows for authorized viewing to parts of the database which is great for a business environment. SQL can also store procedures in the database. SQL databases however don’t scale well with massive amounts of data and will have to be moved over to NoSQL databases to increase efficiency.

**JIT 1**

I remember you saying we’d each get our own database. Is this on silo? If so, is there any way to replicate the work we will do on our personal computers without the use of PuTTY?

**Topic 3: What is a DBMS? Are there more than one? If so, what makes them different from each other? How is a DBMS related to a database?**

**3 URLs**

1. <http://www.guru99.com/introduction-to-database-sql.html>
2. <http://searchsqlserver.techtarget.com/definition/database-management-system>
3. <https://techterms.com/definition/dbms>

**Precis of Sources**

DBMS stands for database management system and allows for a collection of programs to allow a user to access the database. The DBMS also allows for users to manipulate the data as well as representing the data for reports. The DBMS is essentially a way to control access to the database. There are four major types of DBMS:

* Hierarchical DBMS
* Network DBMS
* Relational DBMS
* Object oriented Relation DBMS

I will focus on the Relational DBMs, or RDBMS, for this precis since I focused on relational databases and SQL seems to focus on relational databases.

The differences between the types of DBMS are in how they are structured and the data types they accept. The RDBMS usually has a pre-defined set of data types but its feature is forming relationships in the form of tables. The main advantages of using a DBMS is the benefit of letting end users and application programmers access and use the same data while managing data integrity. The data can be better protected and maintain its integrity if the information can be shared using a DBMS instead of creating new branches of a database.

**Summary of Topic**

A DBMS is management tool for a database. It used to allow multiple users to access the same information while maintaining the data integrity much like GitHub with its version control system. The different types of DBMS allow for different features but the most common one is the relational DBMS, used in MySQL, Microsoft Access and any other SQL implementation for a database. The DBMS allows for heightened security and management of who can access and manipulate the data stored in a data base. The DBMS manages incoming data and provides the implementations for how the data will be modified or extracted by users or other programs.

**JIT 1**

Which DBMS will we be getting experience with in this course?