DMIT 1508 SL Notes

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# Introduction to Database

DBMS

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Proprietary Languages + Tools

Query Language

Data Control Language

Data Manipulation Language

Data Definition Language

Database Engine

Structured Query Language (\*)

DML

Data

Metadata

Query

Database

* A collection of data that has been organized
* Data and rules

Database Management System (DBMS)

* Allows you to interact and manage with a database
* Ex. SQL Server, Oracle, Access, MySQL
* Usually are relational (Tables related to other tables)

Data Definition Language (DDL)

* Create and manipulate metadata – the structure of the database

Data Manipulation Language(DML)

* Create and manipulate records – the data stored in the database

Data Control Language

* Controls the access of the database – the security of the data

Query Language

* Allows data to be retrieved from the database

Proprietary Language

* The language used to create a piece of software (The DBMS)
* Many DBMS include a GUI to perform many tasks

Database Engine

* The core programs that make up a DBMS
* Facilitate the interaction between the user, the DBMS and the database
* Ex. User executes a DML statement SSMS. The DBMS requests that data will manipulated. The database engine will cause internal programs to execute and add the data to the database.

It is important to notice that developers do not actually interact with a database. Instead they interact with the DBMS. The DBMS then interacts with the database.

**A computer program is a set of instructions for manipulating information**

– Dan Gilleland

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Advantages of DBMS

* Size -> Data accumulates
* Ease of updating
* Accuracy
* Security
* Redundancy
* Data is important

Database Design Process

* Methodology to create a structure of a database
* Important to:
  + Talk to users – Discover their requirements of the database
  + Review source documents – (Reports, screens, invoices, records…)
  + Identify
    - Purpose of the database
    - The data stored in the database
    - What is the function database (Just store data, add, remove, manipulate data?)
    - Business rules
* Design Process Steps
  1. Talk to users and review source documents
  2. Identify data items and business rules
  3. Logical database design – the developer/user perception of the data stored
     + Create an Entity Relationship Diagram (ERD)
       - Uses IDEF1X notation in DMIT 1508
  4. Physical database design

# Entity Relationship Diagrams