CS 457 - Database Management Systems

Introduction Chapter 1-2

Course Logistics

- Teacher:
  - Dr. Susan Vrbsky (verb-ski) or Dr. V
    - Office Hours - MWF 9:00 am - 10:30 am
- Classroom:
  - SEC 3437 - 11:00 am - 11:50 am.

Class Website

This is a **writing class**.

Grade Breakdown:

- 60% 2 tests with 1 sheet with notes, and final exam
- 40% 6-8 assignments
- Written Assignments are Pass/Fail

Dr. Vrbsky reserves the right to make announcements in class that may not appear on the course site.

2 “Slip Days”, calendar days, are given for students for assignments.

- You can get 2 days for 1 assignment or 1 day for 2 assignments

Chapter 1-2

Databases are a part of most decisions in the enterprise.

- Traditional Database Operations
  - Day to day information
- Datawarehouses
  - Used for decision support
- NoSQL Databases

    - Used mostly for generic information

Databases play a critical role in most major software platform

Difference between Data and Database

Data are recorded, known facts.

Database is a collection of logically coherent, related data.
It represents a miniworld, designed and build for a specific purposes,
for a specific user group for preconceived applications.

A **Database Management System** is software to manage, create, and maintain a database. In a **Database Management System**, you define the types of the data, while it controls the data on disk. It also allows you to manipulate the data.

Why use it?

Quite a few reasons:

- Program-Data Independence
- Data Abstractions
- Conceptual Representation
- Meta Data
- Share Data
- Multiple Views
- Transaction Processing

But the biggest and most important: **Optimization**.

A **Database System** is the combination of **Data** and a **Database Management System**.

The **Database System** has both the

- **schema** (skee-mah) or **meta-data**
- **instance** or **actual data**

3 Schema Architecture

- **External View**
- **Conceptual**
- **Internal**

Data Model

Describes the **structure**.

- Record
- Types
- Relationships
- Constrations
- Basic Operations

Types of **Data Models**

- High Level (UML)
- Low Level (XML)
- Implementation (Relational)
- NoSQL (Column, Key-Value, Document Stores)

Data Languages

- DDL
  - Data Definition Language
- DML
  - Data Manipulation Language
- SQL
  - Structured Query Language.
  - Combines both DDL and DML.