

- Examples of databases: MySQL, Access, and node.js

|                                        |          |                    |
|----------------------------------------|----------|--------------------|
| HTTP Server                            | Database | Scripting Language |
| Operating System (Linux, Windows, Mac) |          |                    |
| Hardware                               |          |                    |

#### Flat File

- Flat files are where databases are stored in one file, typically separated by markers that identify where records/elements start and end
  - Examples: Excel and other spreadsheet programs
- One-to-many relationships: A single entity is associated with many other entities
- The nature of all data being on one file makes the database easily accessible and portable

#### Structured Query/Relational Database

- Structured Query Databases are similar to flat files when it comes to how they can be viewed
  - Viewed as its own table, similar to a single spreadsheet
- Instead of having one large database like a flat file, a Structured Query breaks up data based on user needs and groups related data into tables
  - Multi-Page Spreadsheet, each page containing different information

#### Movie Example

| Page 1: Studio |              |          |
|----------------|--------------|----------|
| Name           | Opening Date | Tax Code |

| Page 2: Movies |         |      |             |                 |
|----------------|---------|------|-------------|-----------------|
| Name           | Release | Date | Description | Production Cost |

- Structured Query Databases is a relatively human-readable sentence structure language that uses a fixed vocabulary to describe certain data we want and how we want to use it
- Many-to-many Relationships: Multiple records in a table associated with multiple records in another table
  - Ex. An actor can be in many different movies and a movie can have many different actors
- Query languages can be used to ask the database to find records based on certain tables of data
- This style can be efficient when it comes to storage size, though interacting with the data through queries can be difficult as both one-to-many and many-to-many relationships are best represented through intermediary tables

#### MySQL

# Math 1010 Finals Study Guide

**Jicheng Xie**



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