Databases for the Digital Humanities

Recap and WordPress integration

Lorenzo Soligo - Ca' Foscari University of Venice
Master's Degree in Digital Humanities 2020 - Lesson 2

Agenda

- Basic definitions
- Types of databases (SQL and NoSQL)
- Entity-Relationship model
- MySQL and MySQL Workbench
- Database + WordPress integration

Database and DBMS: definition

- A database is "an organized collection of data"
- A DBMS (database management system) "is the software that interacts with end users, applications, and the database itself to capture and analyze the data"
    - for instance, MySQL is probably the most famous DBMS

This means that a database is (in the simplest case) a file in a computer, while the DBMS is the software that lets us work with this file using the abstractions that we are used to.

Relational vs. others

- There exist many types of databases
  - relational: work with tables (e.g. MySQL)
  - graph: work with a graph (e.g. Neo4J)
  - documental: work with documents (e.g. MongoDB)
  - key-value: work with pairs <key, value> (e.g. Redis)
  - ...

- SQL = Structured Query Language
- NoSQL = Not Only SQL

ACID vs. BASE: two "philosophies"

- ACID: typical of certain SQL databases, e.g. PostgreSQL
  - Atomicity
  - Consistency
  - Isolation
  - Durability

- BASE: typical of NoSQL databases (Neo4j, ...)
  - Basically Available
  - Soft state
  - Eventual consistency

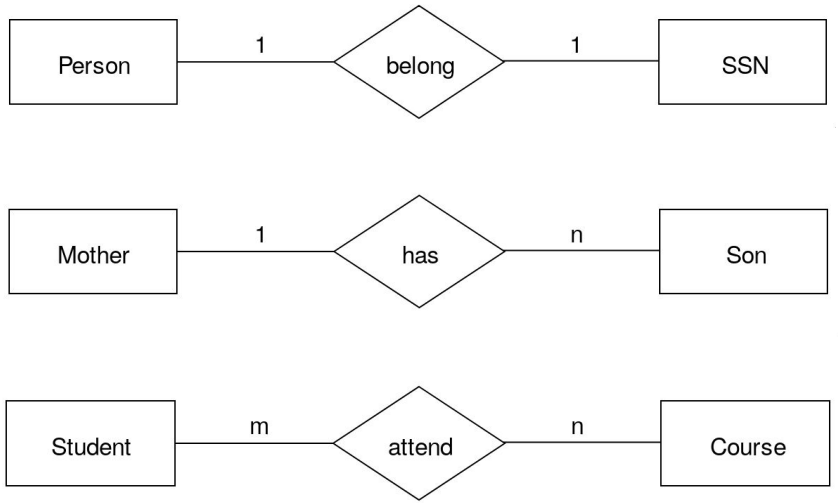
MySQL and MySQL Workbench

- MySQL is a relational DBMS (RDBMS)
- MySQL is not ACID-compliant (but we don't care)
- MySQL Workbench is a tool which eases the usage of MySQL through an intuitive GUI

The Entity-Relationship model

- Entity: "a real world thing" (e.g. Person, Order, Cat, ...)
- Attribute: property of an entity (e.g. age, height, amount, ID, SSN, …)
- Relationship (between entities) (e.g. place, have, rent, …)

Relationships: 1-1 1-n n-m



Primary and Foreign keys

- Primary key: value (or collection of values) that uniquely identifies an entity
  - e.g.: SSN for a person, student ID for a student, order ID for an order, …
  - usual MySQL configuration: AI (auto-increment), PK (primary key), NN (not null), UN (unsigned)

- Foreign key: field (or collection of fields) in one table that refers to the PRIMARY KEY in another table
  - links two tables together
  - e.g. an Order must be related to the ID of the user who placed it

Reminder

Before using MySQL Workbench remember to **start your MySQL server**!

On Windows:	Services → MySQL → Run it
On Linux:	sudo systemctl start mysql
On macOS:	System Preferences → MySQL → Start MySQL Server

Inline Google Spreadsheet Viewer

Another website: dh2019.altervista.org

Docs Support forum

Great example with Google Sheets

Relies on DataTables

Another nice example