Intro to Web Design and Development, Class 10

Database Theory & ActiveRecord

Schedule

Part 1 - Homework Questions, Sinatra Review, More Ruby

1. Database Theory

a. What is a database?
    i. A collection of organized data - typically in tables
    ii. Usually put together to model real-life objects
    iii. A DBMS or database management system is an interface to deal with the data itself
b. Database types
    i. Oracle
    ii. Sybase
    iii. MySQL
    iv. PostgreSQL
    v. SQLite
c. Ruby + Databases
    i. Ruby uses a variety of databases
        1. PostgreSQL
        2. SQLite
    ii. Ruby uses a special system called an ORM to interact with the database
d. What's an ORM?
    i. Stands for Object-relational mapping
    ii. Create a "virtual object database"
    iii. Makes interacting with database objects easy
e. ActiveRecord
    i. ActiveRecord is an ORM
    ii. You could use DataMapper - but ActiveRecord is standard with Rails
    iii. It makes using a database fun!
f. Understanding Relationships
    i. Objects are related to each other in certain ways
    ii. There are many ways they can be related to each other
    iii. One to one
        1. A row in a table is associated with only one row in another table
        2. A user has one spouse (hopefully)
    iv. One to many
        1. A row in a table can be associated with one or more rows in another table

        2. A hotel can have many rooms
    v. Many to many
        1. One or more rows in a table are associated with one or more rows in another table
        2. Customers can purchase many products, products can be purchased by many customers
        3. Through - done through a “join” table
g. Exercises
    i. Draw out the tables, columns, and relationships for the following scenarios:
        1. Online store
        2. Facebook-like website
        3. Forum

Homework

Goals

1. Study database structure
2. Enhance your understanding of database concepts

Assignment

1. Pick two of your favorite websites and draw out diagrams illustrating what their database tables and relationships look like.

Recommended Activity

This is a pretty good explanation of database relationships. Ignore the parts about Filemaker Pro and read up until “How to setup a join table”:
http://help.filemaker.com/app/answers/detail/a_id/9922/~/understanding-and-creating-many-to-many-relationships-in-filemaker-pro