Lesson 1-Grounding Ourselves in Database Concepts

Week 1 Concepts

1. A database is like a spreadsheet.
2. A database is better than a spreadsheet because it can answer human questions.
3. Data design means putting thought and deliberate strategy into crafting how you will store and retrieve data.
4. Website content is often stored as data in a database.

A Database is Like a Spreadsheet

Data items are stored in rows in a database; the columns (often referred to as **fields**) identify the categories for the individual details in each row. For example, in a student database, each unique student would have a row in the students table. The headings (fields) for the items in the row might be: *student\_ID, last\_name, first\_name, program, Domestic/International*, et cetera. Furthermore, in a spreadsheet, data that belongs together might be organized on separate tabs or “sheets” in MS Excel. For example, in a Humber College spreadsheet, one sheet would have students, one sheet would have teachers, one sheet would have programs and courses, et cetera. In a database, we use separate **tables** to store data that belongs together, rather than putting everything together in one table. Can you imagine trying to keep track of students, teachers and courses all on one tab in a spreadsheet??

A Database is Better than a Spreadsheet

A database is not just a repository for data. A database system can store, retrieve and make sense of data. A database can answer questions that human users might have: “How much do I have in my account?”, “Does this come in red?”, “What’s on sale this week?” There is an infinity of questions that our users want answered from our websites. Part of our job as the web developer is to be the intermediary between the human world and the computer world. We need to be able to speak Human to humans, and Computer to computers. When we ask a question of a database, we call it a “**query**”. The language that we use to ask a database a question is **SQL** (Structured Query Language). SQL (often pronounced as, “sequel”) is the language that this course focuses on. We will craft our queries so that the computer software provides a desired result, then craft that result (on a web page) so that it makes sense to our human users.

Data Design Means Putting Thought and Deliberate Strategy into Crafting How You Will Store and Retrieve Data

In the text above, we discussed rows and columns and tables and data that “belongs together”. What goes in a table, row, or heading are decisions that you will make based on how your data will be accessed, by whom, and for what purpose – what questions will your users want answered? For full-stack web developers, this mindful approach extends into other areas of coding concern: naming your variables, designing your objects and classes, constructing your functions, and architecting your application structure. All of these actions (and more!) deserve considered thought with regard to making sense of stored values for the people that wish to use it.

Website Content Is Often Stored As Data in a Database

Most online applications now are “data-driven” websites, meaning that the content (text and images) is retrieved from a database. Examples of this would be a blog that stores users, posts and comments; and a social media site that stores posted content, and the network of interconnected users (aka “friends”).