Intro to Databases for Business Analytics  
Spring 2018

Required Course Material
- This course does not use a textbook
- Any required readings will be provided via Canvas
- Students must have a laptop that they can bring to class – Mac or PC is fine, as long as your operating system is up to date (at least Windows 7 and Mac OS 10.8)
- Slides and files will be uploaded to Canvas after class

Required Prerequisites

This course assumes no previous knowledge of programming or code.

Course Description

We don't think about databases much, right? At least not when they’re working right. But they’re all around us. They’re in every product we use. And when they don’t work (think about the iCloud, LinkedIn, or Ashley Madison data breaches in which hundreds of millions of emails and passwords were exposed) the consequences can be extreme.

Every modern company stores their data in a database (it’s like a really big version of Excel), and if you want to analyze the data, you may be expected to know how to access it yourself. In fact, at many companies are requiring even their business leaders to have an understanding of databases. At the very least, knowing how to set up and interact with databases will improve your ability to GSD (get stuff done), strengthen your understanding of how technology works, and make you less of a pain for developers to work with.

In this class, we’ll explore basic SQL (the most common database language) for business analytics. At the end of the course, should should have a deeper understanding of how databases work, how they fit into the general technology stack, how to connect to databases, and know how to browse and exporting data from databases.

Course Objectives

In this course we aim to develop both conceptual understanding of databases and procedural skill in interacting with them with a focus on real-world use-cases. Each session will explore several new concepts and active exercises for practicing them. Note that the order of these topics and assignments may change.
<table>
<thead>
<tr>
<th>Session</th>
<th>Topic</th>
<th>Assignment</th>
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| 1       | Querying Bootcamp:  
- Overview of the course  
- What is SQL?  
- Installing SQLite, text editor, and command line  
- Command line crash course  
- SQLite vs Postgres vs MySQL  
- SELECT  
- Math  
- WHERE  
- AND |  
- Assignment 1 (Career and Offers Data): Create a database on your own computer and write queries that answer eight question prompts. |
| 2       | Querying Bootcamp pt. 2:  
- Renaming columns  
- Concatenating data  
- String searches using LIKE  
- Matching multiple values using IN  
- Searching by dates & times  
- Distinct, order by, limit, Case (if...then statements)  
- Intro to aggregate functions  
- Subqueries  
- Joins |  
- Assignment 2 (Career and Offers Data pt. 2): Create a database on your own computer and write queries that answer eight additional question prompts. |
| 3       | Querying Bootcamp pt. 2:  
- Truth tables  
- Aggregate functions  
- Group by  
- Extracting from datetime  
- Having |  
- Assignment 3 (Career and Offers Data pt. 3): Create a database on your own computer and write queries that answer eight additional question prompts. |
| 4       | Creating Databases:  
- Setting up a database instance on Amazon  
- Creating a new database |  
- Assignment 4: Get a dataset up on Amazon |
|       | ● Creating tables  
|       | ● Column types  
|       | ● Loading CSV data  
|       | ● Updating Data  
|       | ● Deleting Data  
|       | ● Cleaning Data  
|       | ● Primary Keys and Constraints  
|       | ● Updating Tables  
|       | ● Multi-relational tables  
|       |   ○ One-to-Many  
|       |   ○ Many-to-Many  
|       | ● Uploading Data to Amazon RDS  
| 5    | **Web Apps/Security + Data Analysis:**  
|      |   ● Connecting a web app to a database  
|      |   ● SQL Injection  
|      |   ● Data Analysis & Tools  
|      |   ● Yammer Case  
| 6    | **Data Analysis pt. 2**  
|      |   ● Yammer Case Continued  
|      | **Final Project**  
|      | Create a SQL Cheat Sheet  

**Grading**

**Participation (30%):**
- Students will contribute in class by sharing solutions to challenges.

**Assignments (40%)**
- There will be four major assignments.
- All assignments should be completed individually, although you may confer with other students.

**Final Project (30%)**
- There will be one final project.
- The final project should be completed individually.