Course: INT 93S
Quarter: Summer 2017
Assigned: 29 June 2017
Due: 9:00 5 July 2017

Relational Databases and JSON Lab

Collaboration Guidelines: For lab assignments, code can be written together (with your lab partner) and turned in separately. Written analysis for the lab, while it can be discussed, should be written separately.

The goal of this lab is to be able to collect and organize data from different data sources. You will organize JSON data, write SQL queries, and compare JSON and SQL databases.

Turn-in

1. Create a readme file titled "lastname_firstname_readme.txt" which includes:
    a. First name and last name of you and your partner
    b. How much of the lab you finished in class
    c. Any references you used
    d. Anything you would like the professor and TA to know.
2. Put the files for Part 1, 2, 3, and 4 in a folder named "lastname_firstname_lab2"
3. Zip the folder and upload it to Gauchospace

Part 1: JSON

1. Create a shopping list for the first 3 recipes from Recipe Puppy's API using example file.
2. A little about the API: http://www.recipepuppy.com/about/api
3. Step 1: Write a program that creates a shopping list text file for the first recipe
    a. Copy and rename "json_starter.py" to "lastname_firstname_lab2part1step1.py"
    Name the output file "lastname_firstname_lab2part1step1.txt"
    The example query's output content would be

        Vegetable-Pasta Oven Omelet:
        1. Tomatoes
        2. Onions
        3. Red Pepper
        ...
        14. Black Pepper

4. Step 2: Write a program that combines 3 recipes together
    a. Copy and rename "json_starter.py" to "lastname_firstname_lab2part1step2.py"
    Name the output file "lastname_firstname_lab2part1step2.txt"
    The example query's output would be

        Recipes:
        1. Vegetable-Pasta Oven Omelet
        2. Roasted Pepper and Bacon Omelet

3. Broccoli Oven Omelet Recipe
Ingredients:
2 tomato
3 onions
1 red pepper
2 garlic
…

5. Step 3: Sort list in alphabetical order, with the same output file format as Step 2
   Copy and rename “json_starter.py” to “lastname_firstname_lab2part1step3.py”
   Name the output file “lastname_firstname_lab2part1step3.txt”
   Tutorial/Reference on sorting:
   http://pythoncentral.io/how-to-sort-a-list-tuple-or-object-with-sorted-in-python/
6. Step 4: Change query to produce a different shopping list
   a. Copy and rename “json_starter.py” to “lastname_firstname_lab2part1step4.py”
      Name the output file “lastname_firstname_lab2part1step4.txt”

Part 2: MySQL
Analyze stack exchange’s database: http://data.stackexchange.com/stackoverflow/query/new
Example query:
http://data.stackexchange.com/stackoverflow/query/49109/suggested-edits-on-my-stuff

1. Write a simple SQL query that uses an inner join to connect two tables and filters the results.
   a. Save the query to a file titled “lastname_firstname_lab2part2query1.sql”
   b. Save the results to “lastname_firstname_lab2part2query1.csv”
2. Write a simple SQL query that uses an outer join to connect the same two tables and filters the results.
   a. Save the query to a file titled “lastname_firstname_lab2part2query2.sql”
   b. Save the results to “lastname_firstname_lab2part2query2.csv”
3. In a document “lastname_firstname_lab2part2.txt” answer the following questions.
   a. How are inner joins and outer joins different?
   b. How long does it take to run different SQL queries?
   c. Why would one take longer than the other?

Part 3: MYSQL VS JSON

1. Take a look at the given CSV file: Pokemon.csv
2. In a document “lastname_firstname_lab2part3.txt” answer the following questions.
   a. Draw and describe how would you format the data for a database?
      i. Include connections for public and private keys
      ii. Example drawing: https://i.stack.imgur.com/n7i51.png
      iii. For the drawing, you can do this by hand and take a picture of it or use an application like google drives drawings.
   b. How would you format the data for a json file?
   c. List 3 pros and cons of each format.

Part 4: Extra Credit

1. Choose a public API for JSON that doesn't require authentication from https://github.com/toddmotto/public-apis
2. Write a python program and save it as “lastname_firstname_lab2part4.py” that:
    a. Extracts information from the API.
    b. Formats the information in a meaningful way.
    c. Output the meaningful information into a txt file.
3. Answer these questions in “lastname_firstname_lab2part4.txt”
    a. What API did you choose?
    b. What question were you trying to answer with your query?