CSCE 120: Learning To Code

Introduction To Data
Hacktivity 2.1

Introduction

Prior to engaging in this hacktivity, you should have completed all of the pre-class activities as outlined in this module. At the start of class, you will be randomly assigned a partner to work with on the entirety of this hacktivity as a *peer programming* activity. Your instructor will inform you of your partner for this class.

One of you will be the driver and the other will take on the navigator role. Recall that a driver is in charge of the keyboard and computer while the navigator is in charge of the handout and directing the activity. However, you are *both* responsible for contributing and discussing solutions. If you were a driver/navigator in the prior activity, switch roles for this activity.

Download Your Starter Code

Point your browser to `https://github.com/cbourke/RosterApp` and download the project code for this hacktivity. Unzip the file to your CSCE 120 folder and drag it into your Light Table workspace.

1 Data Design

In this exercise you will design a JSON object and to model a savings account. Discuss with your partner what pieces of data should be included and how to model them. At a minimum, your data should model the following.

- The owner of the account; include as much relevant data that you can think of

- A way to uniquely identify the account
- Its balance and APR

Brainstorm with your partner and include as many pieces of data that you can think of to include. You should try represent as many of the data types supported by JSON as possible (numeric, string, object, array, boolean).

1. Once you have a well-thought out design, write well-formatted and valid JSON to model this bank account using some dummy data in a file named `account.json` in your project.
2. Verify that your code is correct by running it through an online JSON validator such as http://jsonlint.com/.
3. Visualize your object by running it through a visualization tool such as http://chris.photobooks.com/json/.
4. On a separate piece of paper, draw a diagram your object as a tree.

2 Data Transformation

In this exercise, you will convert some data from one format to another.

2.1 Manual Conversion

1. Open the `data/books/books.xlsx` Excel file which contains some data on free textbooks for CSCE courses.
2. Create a new file in the same directory named `books.json`
3. Manually convert some of this data (at least three records) to a JSON format
4. Validate your JSON using the JSON Lint validator as before. Fix any issues or errors that you have before moving on.

2.2 Using a Tool

Manually converting data is tedious, time consuming and error prone. In this exercise, we'll use a tool to do the conversion for us.

1. Open the CSV version of the file, `data/books/books.csv`
2. Point your browser to http://www.convertcsv.com/csv-to-json.htm
3. Cut/paste the CSV data into this tool and be sure to select the proper options (including the "First row is column names" option).

4. Cut/paste the final version into your `books.json` file
5. Validate the data using the same JSON Lint validator
6. Repeat the process until the data is properly modeled

3 Data Debugging

You've been provided a JSON data file containing enrollment data for several students and courses (see `data/roster/roster.json`). However, the file contains several errors. You will identify and fix these errors and run the provided application to visualize the data in a "dynamic table".

1. Open the JSON file (`roster.json`) and cut/past its contents to the JSON Lint validator
2. Fix all formatting errors until the data passes validation
3. Copy the validated contents back to the `roster.json` file, replacing the original contents
4. Evaluate/launch[1] the `roster.html` file and observe the results. You'll notice that though the JSON is now valid, there are several syntax errors that prevent it from being processed. Identify these syntax errors, fix them, and reload the page
5. Now that everything appears to be running fine, you can view the data. However, you'll still observe some inconsistent data. Fix these errors and reload the final page

[1]Recall: for Macs it is command-shift-enter; for Windows it is control-shift-enter. Review Hacktivity 1.1 for LightTable orientation.