Lab: Importing Data

Learning Objectives

By the end of this lab, you should be able to:

- Import data from a file
- Process the imported data to produce summary statistics

Details

In this project, we are going to use real data! I have provided a file with the maximum and minimum air temperatures for Norman OK from 2016, as measured by the Oklahoma Mesonet. The Oklahoma Mesonet is a state-wide network of weather observing stations, with approximately one station per county. You can find more information and current observations at http://www.mesonet.org. I downloaded the data from this URL:

http://www.mesonet.org/index.php/weather/daily_data_retrieval

Your job is to import the mesonet data that I have provided, compute the maximum daily temperature, the minimum daily temperature, the average maximum and the average minimum. Keep in mind that the data is quality controlled so some days are marked as "bad". This is done by setting the value to less than -900. Be sure to check for invalid data when you compute your statistics or you may end up with a minimum temperature of -996!

The first line of the data show the column names. You can import the data into a spreadsheet program just to see the data by hand if you want. You can't use this to compute your statistics as I want you to write the code for that yourself! **Milestones/Steps**

1. Load the Mesonet data into a variable
2. Split the data up by lines
3. Iterate through each line after the first one and split the data by commas
4. Compute the statistics on all valid data
5. Report the statistics to the user. I did this by showing the variables but you could say them or report them in some other way.
6. Export your file as an XML file and turn it in electronically for grading by your teacher

Point distribution/Rubric

- 15 points for correctly computing the maximum temperature and not using any invalid data
- 20 points for correctly computing the minimum temperature and not using any invalid data
- 20 points for correctly computing the average maximum temperature and not using any invalid data
- 20 points for correctly computing the average minimum temperature and not using any invalid data
- 10 points for error handling, which includes ensuring you do not use invalid data in any of your statistical computations or average counts

- 15 points for a short writeup describing your program.
    - 15 points for a writeup that is spelled correctly, uses proper grammar, sentence structure, and capitalization and describes the game including the rules, the use of variables and control.
    - -2 points per spelling error
    - 0 points if you don’t describe the drawing or use any non-G rated words
- Up to 10 points of extra credit are available for very creative projects