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Team 45

Section 03

**Programming Homework 1**

Team Reflection Section

There were many benefits when using MATLAB to implement this code. Primarily, MATLAB already has extensive functions for calculating statistics. Primarily, MATLAB already has functions for calculating mean, median, mode, standard deviation, variance, minimum, and maximum of a data set. In other programming languages, these functions have to be created by the programmer. Another advantage of MATLAB is its ability to work with large arrays without using loops. For example, bottle volume could be calculated and stored in an array using a single line, while other languages require the programmer to loop through the entire array.

A few downsides to working with Python are that error checking in the language is tedious, as, unlike C, all the errors are not listed before the file runs, as well as having to convert the numbers to floats as they were imported, and having no way to check for the end of the file besides checking to see that what was read in was empty. We learned how to use Try/Except syntax in order to trap errors within the function, which was very helpful to prevent the program from ending if, for example, there was no singular mode. Overall, using Python with this problem was not as difficult as expected.

Unlike MATLAB, C does not have predefined functions for mean, median, mode, standard deviation, and variance, so we had to implement our own logic. While this took up many lines of code, it was not especially challenging since the concepts are ones that we are very familiar with. One benefit of using C to solve this problem, was that it was very easy to retrieve the inputs from the formatted file. Another benefit was the ability to create structs to group information that was associated with one data point.

Individual Reflection Section

High Confidence Programming Constructs

* Converting from one data type to another
* Basic input / output
* Logical Variables
* If-else/while
* Relational Operators
* Logical Operators
* Error trapping

Low Confidence Programming Constructs

* File I/O
* Error checking
* Array manipulation