Troy Tully

Portfolio

**Compiler**

 This code is to create a scanner-parser

To run:

jFlex/bin/jflex algebra.jflex

java -jar java-cup-11b.jar algebra.jcup

javac -cp .:java-cup-11b-runtime.jar \*.java

java -cp .:java-cup-11b-runtime.jar AlegbraParserTest

Modify “input.txt” to test different statements.

This project was one of the largest coding projects I’ve ever done in a few continuous sittings. It made me feel much more confident in my skills of problem solving and creativity. It is a scanner-parser for a made up language we came up with at class. We were supposed to do this as a team, but I ended up coding nearly all of it because of the difficulty of breaking up the coding tasks. It wasn’t until I understood the entire system that I was able to actually work on each individual part. Still very proud of getting this done as I don’t think any other group even handed a project back in! This definitely helped me system level understanding and overall how languages choose certain features over others.

**Chat Room**

Chat Room is a very simple communication application that allows you to talk to anyone in the chatroom as well as send private messages. I coded this with one other person. We didn’t really help each other at all but since the two pieces of software had to directly communicate it took a lot of exact communication. This pushed my creativity and communications skills. I thoroughly enjoyed how difficult this project was due to the sheer amount of moving parts that had to work properly. It certainly helped me push my ability to code!

**PigPlayer**

 I coded this project a long time ago, back in maybe 2013. It was my first time coding something without any real restrictions on how to implement and not much structure. I remember coding it right away and thoroughly enjoying how everything came together and worked the way I had imagined it would. It also helped me understand the concepts and techniques of software design and I found out how much I enjoyed coding. It certainly shows my understanding of how strong the Java language is and how it can do some amazing things!

**KMeans Implementation (**[Location](https://colab.research.google.com/drive/16XA8iha9dP35yw9gn41T_eDqaUBiCUnZ#scrollTo=2aydolJDTedl))

Kmean implementation is a short script that implements the Kmeans machine learning algorithm. Kmeans is an unsupervised clustering technique for finding distinct clusters of data points that are deemed to be apart of the same classification. This means each group of point are homogenous and help data scientists understand the structure of the data. This was a very interesting project as it is very visual and easy to understand the math behind it. This project developed my effective solving skills as you had to put math from a page into code in a script with data and everything!

**Ski Math** (<https://github.com/andrehamm/ski_math.git>)

Ski math is a game developed in Unity that runs on a Django backend. The game is designed to teach second or third graders math. I had three other partners and we all focused our efforts on one part of development. I focused on creating the game graphics and logic that the game ran on and helped partially in the website and database connection. Ski Math taught me a lot about the software engineering aspects of team work and communication skills. This assignment required a system level understanding of the computer, an understanding of software design, collaboration with a team, and effective problem solving skills and took a lot of creativity! This one certainly checks off all the boxes for the CS and Westminster Learning goals!

**Senior Project**

My senior project is a Arduino based trail user detection system. Using an accelerometer and ZigBee device inside a casing with a solar panel, it is a standalone device. I was never able to work on the housing or solar panel due to complications with Covid-19. It works other wise and I’m planning on trying to use this device on trails here in Utah. The device alerts other trail users using audible alarms as well as turns warning lights on at other nearby devices. This pushed all of my skills but this was a tough time for me personally so I wasn’t able to devote my full attention when Covid stuck the United States and NYC most importantly.