Project Write Up
Module H: Python Practical
170D Warrant Officer Basic Course
Due Date: August 11, 2022

Purpose: This project write up summaries my thinking and execution of this project. Additionally, challenges, successes, and lessons learned will be covered as well.

Project Progress:
Day 1: I spent the first day designing and thinking over how to attack this project. I wrote out a few concepts and courses of action. After coming up with a plan, I began designing the beginning of the project. I identified potential functions I would need as well.

Day 2 – 4: I worked on my main program. I researched how to read in a tab delimited text file using the Python CSV module. The dict reader function of the module created a dictionary from the contents really well. After I had a list of dictionaries to work with, I began establishing my functions. I took my time and worked one function at a time. Once I completed all functions, I began working on argparse and implementing the proper way to use command line arguments. Simultaneously, I was updating my documentation to reflect the progress I was making.

Day 5 – 6: I began developing my unit test for each function within pyfamily.py. For each function I created a valid and invalid test to ensure my functions were operating properly. My goal of unit testing was to think of every possible way that my program could crash or return an improper value.

Day 7 – 14: After I was comfortable with my unit test and program overall, I began to focus on GitLab and documentation for this project. I continued to try and develop my argparse, but when I tried to go too in-depth, I would start messing things up and not know why. I continued to read the requirements paper and make my program mimic that.

Challenges:

1. Designing prior to coding: I am still rather new to programming and having a project that required us to layout our design prior to coding really took some getting used to. I didn't understand the importance of designing until I had a timeline and project that required me to do it. I learned a lot in the design phase, mostly things I thought would be a good idea that weren't. However, it did keep me on a timeline and keep me organized each day.

2. Recursion was a beast to understand and implement. Prior to this, I never heard of recursion, but I used it for the ancestors and descendants requirements. It took me a few days to understand, but once I did, I was able to use it effectively.

Successes:
1. Argparse: This was my first time working with argparse. It took a few days to understand it's importance and I am glad I did. The concept seemed like a large task, however, once I got started everything fell into place.

2. I felt like I had a clear path because I planned everything out. Once I had somewhat of a vision and began coding, everything seemed to fall into place. I am sure my program isn't perfect, but I feel like I was able to incorporate a lot of new methods and ensure all of my documentation was proper.

Lessons Learned:

1. Always read the extra credit. Not for the points, but for the education. Prior to this assignment, my knowledge with command line arguments was limited. I understood what positional arguments were, but I didn't know how to properly implement them. The extra credit for this assignment said to use argparse and I am glad I did. I researched it and once I understood how effective it was, it really made creating and testing my project easy.

2. Design, design, design. Designing this project really helped me take a step back and digest the problems. I could've started coding right away with no clear direction, but I took a day to plan my attack. This helped me develop small goals and check them off as I made progress.