4-2 Milestone Three

**A. Briefly describe the artifact. What is it? When was it created?**

This artifact is from CS 405: Secure Coding**.** The main data is a 2-dimensional array of strings, with one set being the names of clients and the other being a number representing the clients service. There is a simple interface that first asks for credentials, and once you are in you have options to display or modify the data. It was created in October of 2021.

**B. Justify the inclusion of the artifact in your ePortfolio. Why did you select this item? What specific components of the artifact showcase your skills and abilities in algorithms and data structure? How was the artifact improved?**

This artifact seemed like a good candidate based on the crudeness of its data structures. It uses just a 2D array, not even a vector, and it seemed like we could do better than a C++ primitive. I think my decision to make and implement a customized C++ struct demonstrates my ability to made software more modular and friendly for future development. Thanks to my enhancements, further changes in the future to the client list and service list will be easier, as you can just push new ones to the vector of Client structs, rather than modify an internal 2D array to make changes.

**C. Did you meet the course objectives you planned to meet with this enhancement in Module One? Do you have any updates to your outcome-coverage plans?**

I’m happy with the changes I made to this program. Since working in software I have strived to make the development process as developer friendly as possible, both for myself and future people who might end up working on the same code as me. Part of that process means creating data structures that are intuitive, easy to understand, and easy to modify.

**D. Reflect on the process of enhancing and/or modifying the artifact. What did you learn as you were creating it and improving it? What challenges did you face?**

The easy part of the process was simply taking the two string values that were previously part of the 2D array and creating a new struct that has 2 strings as fields. The somewhat tricker aspect was efficiently filling a vector of that struct with default construction and overallocation, which I had to refamiliarize myself with.