CS499 Mod 4 Narrative Sam Dayball

This artifact is displaying my category of Algorithms and Data structures. I created this in June of 2023 for my CS410 class that covered reverse engineering principles. I included this artifact for this category because it does encompass a good variety of data structures and in order to get the file I had to reverse engineer a binary file to build the code. The specific components that show my abilities in data structures and algorithms are the interactions the user has with the system in order to select clients from a list which interact with vectors and arrays within the code. All while prompting the user for choice and throwing errors if the user makes an incorrect or invalid input. The primary way this artifact has been improved is in lines 41 through 90 of code. One of the biggest flaws in my original code, which I commented out on lines 34 – 37 was an unsecured way of storing passwords in my code. My enhancement creates a function to generate a random salt and sets the salt length to 16 characters. After we generate the random salt I have a function to hash the password with the salt, after this takes place then I placed some example usage in my main function to demonstrate how the generated salt and hashed password would interact with the code to keep password data secured. This is a major improvement from a security standpoint because it would prevent anyone from simply reverse engineering the code and being able to discover user passwords and gaining access into internal systems. I did meet the course objective I planned ot meet with this enhancement in Module One which was to demonstrate my ability to use innovative techniques and skill along with other tools to help implement a better value of a solution. By implanting this new secured method of storing passwords I have displayed my skills in using other tools to create a better solution. The process of enhancing this really helped me learn more about implementing salts and hash’s into code, which I haven’t done a lot of in the past so I feel like I have now discovered a new skill to carry on into my professional programming career.