**4-2 Milestone: Algorithms and Data Structure**

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A. Briefly describe the artifact. What is it? When was it created?   
The artifact I decided to highlight is a pair of C++ applications, whose purpose is to encrypt and decrypt files. This artifact was created for the purpose of this portfolio. I had a previous encryption related program that I had intended on working with but decided that certain fundamental problems with the design of the original meant that I should rebuild from the ground up. I wanted to give the new application more flexibility for the user, as most of the original relied on hardcoded values and did not provide users much independent value.

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?

There are a few reasons for selecting this artifact. One of the first is to exhibit an understanding of creating an application capable of file manipulation. I believe that being able to create an application capable of modifying other files is a key requirement for any job in the field. The other reason is to highlight an understanding of security practices. In a position where we work with sensitive data, we must take steps to protect it. The original artifact would simply act on a file whose name was hardcoded into the source code. I decided to make an encryption application capable of taking user specifications. To properly decrypt a file that has been encrypted, a user must copy and paste the encrypted file and temp.txt file from the encrypt folder to the decrypt folder. This allows our user to encrypt or decrypt any file they choose and have this control from the console rather than being required to modify any source code.

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?

This milestone I had to reconsider my approach and enhancement goals that I had originally laid in Module One. In some cases, we may be required to reconsider our approach, and this is exactly what I chose to do. In the name of time, I used an overly simple method for obfuscating the data (for testing and deadline purposes) and moving forward with this artifact I would like to create a more robust algorithm for encrypting/decrypting.

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?

Overall, I found this artifact to be moderately challenging. I had to revisit a lot of fundamentals regarding C++ file manipulation and noticed some peculiarities in the new applications execution that could create confusion for some users in some use cases. I also learned that it is not always easier to simply take a working application and modify it. Sometimes we must consider rebuilding our programs to enhance functionality.