**CS-499 3-2 Narrative**

**Briefly describe the artifact.**

The artifact in question is a Python script designed to translate an authentication system originally written in Java, with significant enhancements to improve security, usability, and management features. This artifact was created to transition a simple Java-based user login system into a more sophisticated, Python-based application, incorporating modern security practices such as bcrypt hashing for passwords. The initial conversion and enhancements were undertaken to showcase my ability to translate code between languages, apply secure coding practices, and implement new functionalities. It was initially created as the final project for my IT-145 course, in 2019

**Justify the inclusion of the artifact in your ePortfolio.**

I selected this artifact for inclusion in my ePortfolio for several reasons:

1. *Demonstration of Programming Language Proficiency:* It illustrates my capability to understand and work proficiently with both Java and Python, showcasing my flexibility in using different programming languages.
2. *Application of Security Best Practices*: By replacing MD5 hashing with bcrypt, this artifact demonstrates my knowledge of and commitment to secure coding practices, a critical skill in software development.
3. *Complex Problem Solving:* The enhancements, such as implementing an admin login for user account management, generating unique usernames, and introducing password change requirements, exhibit my ability to solve complex problems and add sophisticated features to a basic system.
4. *Attention to Software Design Principles:* The structured approach and modular design of the Python script highlight my understanding of software design principles, making the code more maintainable and extendable.

The artifact was significantly improved from its original version:

1. *Security:* Replacing MD5 with bcrypt for password hashing significantly improved the security of the authentication system, addressing vulnerabilities associated with MD5.
2. *User Experience:* The creation of unique usernames and the implementation of a system to manage password complexity and change requirements enhanced the user experience by making the system more intuitive and secure.
3. *Administrative Functionality:* Adding an admin login for user account management introduced a new layer of functionality, allowing for better control and management of user accounts.

**Did you meet the course objectives you planned to meet with this enhancement in Module One?**

The enhancement of this artifact aligns with the course objectives I planned to meet in Module One, so far, which included learning translating from java to Python, improving security measures, and making the code more robust. This artifact directly demonstrates my growth in these areas.

As for outcome-coverage plans, this artifact and its enhancements have provided a solid foundation. At this moment, I do not have updates to my plan. However, as I continue to build out this project, it may introduce additional opportunities to cover more complex capabilities, such as implementing network security measures or exploring more advanced database management techniques. I plan to continue refining my skills and possibly expanding this project or working on new ones as I explore what my life as a computer scientist might look like.

**Reflect on the process of enhancing and modifying the artifact.**

The process of enhancing and modifying this artifact was both challenging and rewarding. Translating the code from Java to Python offered a deep dive into the syntax and idioms of both languages, reinforcing my understanding of each. Implementing bcrypt for hashing taught me the importance of keeping up with best practices in cybersecurity.

One of the significant challenges I faced was ensuring that the new features, such as the admin login and user account management, were integrated seamlessly without compromising the system's security or usability. This required careful planning, underscoring the importance of a thoughtful approach to software development.

Throughout this process, I learned the value of persistence and attention to detail. I also gained a deeper appreciation for the complexity of secure system design and the importance of considering user experience alongside technical requirements. This experience has strengthened my software development skills and my confidence in tackling complex coding challenges.