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# Practices for Secure Software Report

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## Document Revision History

| **Version** | **Date** | **Author** | **Comments** |
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| **1.0** | **4-20-2024** | **Kaleb Ward** | **Initial Documentation** |

## Client



## Developer

Kaleb Ward

## Algorithm Cipher

The algorithm I would recommend for Artemis Financials’ need is the SHA-256 encryption method. Utilizing SHA-256 will allow for efficient and effective security from outside sources globally. Artemis Financial will need their data to be sent to various outside sources if they want to expand nationally so it is the best course of action to encrypt it for future needs instead of having to redesign it in the future. SHA-256 is an effective encryption method and the encryption of the method is not susceptible to outside breaches compared to other encryption methods. The SHA-256 encryption method utilizes a randomly generated set of bit levels that can be utilized to encrypt data and the size of the encryption is determined by the randomly generated set of bit levels. It all works in conjunction to provide a higher level of security. The SHA-256 encryption method is an effective and efficient method that we can utilize throughout this application to provide Artemis Financial the highest level of security.

The randomness of the encryption method allows for the outside breaches to be deterred due to the way the data is encrypted. Randomness within encryption methods allows for the data to be encrypted in a way that is hard to determine due to the randomness. That’s why the SHA-256 encryption method is so effective compared to others. You can utilize AES (Advanced Encryption Standard) alongside SHA-256 to effectively store and secure data. AES-256 does not utilize keys which means it is not symmetric or asymmetric key cryptography. We can determine overall that hash functions are used with encryption methods to securely store important data such as passwords and randomly generated numbers for passwords, securing personal data such as account numbers and balance are also needed for overall security.

## Certificate Generation

A computer screen with white text

Description automatically generated

A screenshot of a certificate

Description automatically generated

## Deploy Cipher

## The web browser directs the link to a https link which means it is secure therefore providing evidence.

## Url: https://localhost:8443/hash

A screen shot of a computer

Description automatically generated

## Secure Communications

A screen shot of a computer

Description automatically generated

## Secondary Testing

A screenshot of a computer program

Description automatically generated

A screenshot of a computer

Description automatically generated

## Functional Testing

A screenshot of a computer program

Description automatically generated

A screenshot of a computer

Description automatically generated

## Summary

Throughout this project for Artemis Financial we can utilize self-signed security certificates to allow for versatility such as secure http to be used (https). Utilizing secure web pages will allow for various security threats to be deterred or avoided. We can utilize APIs, Cryptography, Code Quality and Code Errors to make sure that the various security threats are avoided, APIs can be used to allow for server and client seamless integration without allowing too much data to be accessed. Cryptography is needed due to the data that is stored within the application, without proper cryptography and security it can allow unauthorized access to sensitive data and cause a serious data breach. Code Quality is needed because without proper code quality updates that should be seamless can take a lot longer which can cause a burden on the developmental team on the backend while also allowing for outside sources to gain entry through unnecessary code. Understanding, preventing, and eliminating code errors are essential to make sure that the application is functioning as intended. It will allow the application to work flawlessly without issues in the background. All the necessary background implementation of various security features are needed to provide the client base with the necessary security while also allowing for the data to be efficiently and effectively used by the client Artemis Financial. Making sure that the various security breaches are patched and determined before the breaches are used is essential within any application, especially a banking application.

## Industry Standard Best Practices

We utilized various industry standards throughout this application for Artemis Financial such as efficient naming of functions and variables. Implementing SHA-256 and AES-256 is an effective security standard to utilize within the Artemis Financial application to ensure sensitive data is not breached while also effectively allowing for seamless integration of various financial features and functions. Artemis Financial needs effective security especially if they want to go national or worldwide with their banking system. There are various regulations from countries that may be opposed to the application, and we may need to integrate future features to ensure the application is working properly. The future stability of the application also needs to be addressed in future updates and stability and integrations in the future.