# CS 305 Module Five Coding Assignment Checksum Verification

# Alexander Freeders

## Algorithm Cipher

For this assignment, I chose to use the SHA-256 algorithm for my cipher.

## Justification

SHA-256 is one of the most widely used cryptographic algorithms that generates a 256-bit, fixed-length hash value from any input. This is significant because a hash value cannot be reversed in order to reveal original plaintext—likewise, ***any*** change to the original plaintext will result in a completely different hash, which will heavily decrease the number of potential collisions, of which MD5 is susceptible. The SHA-2 algorithm family *does* include algorithms that are higher and more secure than 256 (e.g. 512), but these algorithms are much more computationally heavy than SHA-256 (Callaghan, 2024). As SHA-256 is compliant with regulations on securing sensitive data, it makes the most sense to proceed with SHA-256.

## Generate Checksum

A screen shot of a computer program

AI-generated content may be incorrect.

## Verification

I was unable to get the code to work this week. The org.springFramework was not loading for me, I looked online for hours, tried running it different ways, removing libraries and adding them back, to completely reinstalling the entire IDE and going through module 1 set ups, still no go.

The main error I was encountering was “Error occurred during initialization of boot layer

java.lang.LayerInstantiationException: Package jdk.internal.jimage.decompressor in both module java.base and module jrt.fs”, Once I was able to finally get that taken care of by reinstalling / setting up projects properly, I was getting errors for not being able to utilize @SpringBootApplication on line 13. The maven dependencies are all there, I even tried downloading the spring framework from the Help > Eclipse Marketplace to see if that would do anything; but I digress.

References:

Callaghan, P. (2024). *Is SHA-256 secure? Legal & Compliance Experts Say Yes-here’s why*. Is SHA-256 secure? Legal & Compliance Experts Say Yes-Here’s Why. https://blog.pagefreezer.com/sha-256-benefits-evidence-authentication#:~:text=SHA%2D256%20hashes%20have%20strong,like%20SHA%2D1%20and%20MD5.