# CS 305 Module Five Coding Assignment Checksum Verification Template

## Instructions

Using the instructions from theModule Five Coding Assignment Checksum Verification Guidelines and Rubric, replace the bracketed text with the relevant information in your own words.

## Algorithm Cipher

The chosen algorithm cipher for the checksum verification process is SHA-256 (Secure Hash Algorithm 256-bit). SHA-256 is part of the SHA-2 (Secure Hash Algorithm 2) family, designed by the National Security Agency (NSA) to ensure data integrity through cryptographic hashing.

## Justification

SHA-256 was selected due to its strong security features and its widespread acceptance as a reliable algorithm for generating unique hash values. It produces a 256-bit (32-byte) hash value from an input (or message), which is practically impossible to invert, ensuring that the original information cannot be easily derived from the hash. This makes SHA-256 highly resistant to collision attacks, where two different inputs produce the same output hash, a crucial consideration for secure checksum verification.

Moreover, SHA-256's widespread use in various security applications and protocols, including SSL certificates and blockchain technology, further attests to its robustness and reliability. Its ability to provide a unique and fixed-size hash for any data of any length makes it an excellent choice for verifying the integrity of data transmitted or stored, ensuring that any alteration of the original data can be detected.

By employing SHA-256, the checksum verification process gains a strong layer of security, making it suitable for applications that require high data integrity and protection against tampering and cyber threats.

## Generate Checksum

You’ll submit your refactored code to your instructor. Your instructor will review it and this document.

## Verification

Insert a screenshot below of the web browser with your unique information.

[Insert screenshot.] A screenshot of a computer

Description automatically generated