Shane Campbell

CIS 163

Professor Langley

Project #1 Report

This project involved the implementation of several encryption and decryption

techniques, Including Salting, Reverse Ciphers, XOR, Caesar Cipher, Vigenere Cipher, and

Custom Character mapping.

Problems Faced:

- A challenge that I faced when creating the Salting class was ensuring that the str()
  method returned the original text correctly by removing the salt from the cipher text. I
  solved this by calculating the length of the salt string and using that to slice the salt off
  from the end of the cipher text. By subtracting the length of the salt from the total length
  of the cipher text, I was able to retrieve the original text.
- I was tasked with reversing strings without using Python's built in methods like
  reversed() or slicing. This required me to manually manipulate the string by looping
  through it and building the reversed string. I solved this by initializing an empty string
  and prepending each character from the original string to the new string during iteration.
- One of the main challenges I faced with the Vignere Cipher was making sure that the key
  was repeated through enough times to match the length of the text being encrypted. To
  address this, I repeated the key so that it matched the length of the text. For each letter in
  the text I calculated the shift based on the corresponding letter in the key.

- The Custom Mapping Cipher required substituting each character in the text with a corresponding character from a predefined map. If a character did not exist in the map, it had to remain unchanged. I used Python's dictionary get() method to attempt to retrieve the mapped character for each character in the text. If no mapping was found, the original character was retained.

Sources:

https://docs.python.org/3/tutorial/datastructures.html#dictionaries

https://docs.python.org/3/library/stdtypes.html#string-methods

https://www.youtube.com/watch?v=S472gPqwF-o

https://www.geeksforgeeks.org/bitwise-xor-operator-in-programming/

https://www.geeksforgeeks.org/what-is-a-nibble/