

Context:

We have a lengthy message assumed to be in English and encrypted using the Caesar cipher algorithm. The objective was to encrypt and subsequently decrypt the message using the Caesar cipher with a key based on a frequency approach.

Steps:**1. Encryption:**

- a. Chose 7 as a key because of my name Hugo ($H \rightarrow h \rightarrow 7$).
- b. Used a custom `caesar_to_text` function to encrypt the message and saved it to a file (`encrypted.txt`).

2. Frequency Analysis for Decryption:

- a. Conducted a frequency analysis on the encrypted text to identify the most common letter.
 - i. Implemented a function (`frequencyAnalyser`) to analyze the frequency of alphabetic characters in the given text.
 - ii. The function returns a sorted list of tuples containing the frequency of each alphabetic character.
- b. Assumed the most common letter corresponds to 'e' in natural English.

3. Decryption:

- a. Calculated the shift needed for decryption based on the assumed correspondence with the most common letter in the text and in natural english speaking ('e')..
- b. Utilized the `caesar_to_text` function with the decryption action to decrypt the text.

4. Saving Decrypted Text:

- a. Saved the decrypted text into a file (`decyphered_message.txt`).

Summary:

I implemented a frequency analysis function, I utilized my custom function for both encryption and decryption of the original message. The decryption process involved conducting a frequency analysis on the encrypted text, assuming a correspondence between 'e' and the most common letter in the text as we knew it was in english and a long one.

I decrypting the message accordingly, and the decrypted text was then saved to a file.