Name: Antoine J. Smith Jr.

Assignment: Project

Course: CSIS 4010

Scope/Overview:

* Introduction
  + The purpose of this project is to simulate the Lorenz Cipher Machine that Adolf Hitler used to encrypt and decrypt his messages during WWII. Every character inside of a message being sent will be encrypted with its corresponding five-digit encoding. Furthermore, each encryption uses a key that is used in both parts of the cipher: encryption and decryption.
* Solution
  + Encryption
    - Originally, the Lorenz Machine is performed with Xs and Dots, however, in this implementation of the machine. The Xs that represent active are represented as 1s, and the Dots represent inactive are represented as 0s. To add, in order for the encryption to occur, the key and message has to be added together to for an encryption. So, if both corresponding values are the same, it becomes a 0 but if they are opposite, then it becomes a 1.
  + Decryption
    - Similar to the encryption portion but going backwards. The same key is used for the adding portion. However, instead of the key and the message being added, it will be the key and the encryption being added in order to obtain the message back.
* Criteria Establishment
  + Obtains a message from the user and generates a key that consists of two type of keys: psi and chi key to be combined together to form one key. Additionally, this key will be of the same length of the message for an even distribution for the adding process. Next, the corresponding encoding for each individual character in both the message and key will be looked up for the adding to take place.
* Criteria Validation
  + The procedure is validated by print statements showing the corresponding encodings for each character in both the message and key. Then, showing both the resulting encryption encoding in both Alpha & Figures and in its Binary representation. Furthermore, this process stated above is implemented in the decryption portion as well.

Data Design:

* Input Data
  + User inputs a message to be encrypted and decrypted using the Lorenz Cipher format
* EncodingBank & AlphaBank
  + These two instances are are arrays that have corresponding index matches of valid characters in text and in binary.
* psiKey & chiKey
  + These two strings are used to create different halves of the Key
* Encoding
  + This array is used to obtain and display each character within the message is binary correspondence.