

Encrypting and Decrypting with Digraphs

Write a python program to encode and decode a given string using the affine cipher with digraphs. You should have functions that do the following:

1. Convert a string into a list containing lists of digraphs. (Example: If we input “hello”, the function should convert the string into $[[7, 4], [11, 11], [14, 23]]$.)
2. Convert a list containing a digraph into an integer base 26^2 .

$$[a, b] \mapsto a * 26 + b$$

3. Encode an integer in base 26^2 using $C = 15 * P + 3 \bmod 26^2$.
4. Decode an integer in base 26^2 using $P = 631 * (C - 3) \bmod 26^2$.
5. Convert a list containing lists of digraphs into a string. (Example: If we input $[[7, 4], [11, 11], [14, 23]]$, the function should return “hello”.)

Submit the results of encoding and decoding several test strings. Also, decode the following message: “hblcdlyddtithqanhbfxryfardkcryxn”.