You will write a program to encrypt and decrypt messages based on a "code book."

The "code book" will be a very long string read in from the user; you will process

this book by calculating how many times each letter (A-Z) appears. Then you will sort

the list with the highest frequency letters first, down to the lowest frequency letters.

If two letters have the same frequency, they are listed in alphabetical order. Ignore

upper/lower case when processing letters. Once you have the sorted list, assign the

code as follows: Most common letter in the "code book" is an "A"; the second most common

letter in the "code book" is "B", etc. The least common letter in the code will be assigned

the letter "Z". Once you have the code, you will encode and decode messages using the code.

You will also implement two commands: SKIP and EXIT. SKIP means that you will SKIP an entry,

and EXIT means that you will stop asking and end the program.

For example:

Please enter the codebook: pooiiiuuuuyyyyyttttttrrrrrrreeeeeeeewwwwwwwwwqqqqqqqqqq

Sorted frequency of letters in code text:

('Q', 10) ('W', 9) ('E', 8) ('R', 7) ('T', 6) ('Y', 5) ('U', 4) ('I', 3)

('O', 2) ('P', 1) ('A', 0) ('B', 0) ('C', 0) ('D', 0) ('F', 0) ('G', 0)

('H', 0) ('J', 0) ('K', 0) ('L', 0) ('M', 0) ('N', 0) ('S', 0) ('V', 0)

('X', 0) ('Z', 0)

Encode:

['Q', 'W', 'E', 'R', 'T', 'Y', 'U', 'I', 'O', 'P', 'A', 'B', 'C', 'D', 'F', 'G', 'H', 'J', 'K', 'L', 'M', 'N', 'S', 'V', 'X', 'Z']

Decode:

['K', 'L', 'M', 'N', 'C', 'O', 'P', 'Q', 'H', 'R', 'S', 'T', 'U', 'V', 'I', 'J', 'A', 'D', 'W', 'E', 'G', 'X', 'B', 'Y', 'F', 'Z']

Please enter a message to encode: This is a test.

LIOK OK Q LTKL.

Please enter a message to decode: LIOK OK Q LTKL.

THIS IS A TEST.

Please enter a message to encode: SKIP

Please enter a message to decode: EXIT

This program will self destruct in 10 seconds...

# PLACE YOUR CODE UP HERE

# DO NOT MODIFY ANYTHING BELOW HERE OR YOU WILL GET A ZERO FOR THIS PROJECT

def main():

# read the code from input

codebook = input("Please enter the codebook: ")

print(codebook)

freq = analyze(codebook)

printFreq(freq)

encode, decode = assign(freq)

print("Encode:")

print(encode)

print("Decode:")

print(decode)

while (True):

enc = input("Please enter a message to encode: ")

print(enc)

if enc == "EXIT":

break

if enc != "SKIP":

coded = codeme(encode, enc)

print(coded)

dec = input("Please enter a message to decode: ")

print(dec)

if dec == "EXIT":

break

if dec != "SKIP":

coded = decodeme(decode, dec)

print(coded)

print("This program will self destruct in 10 seconds...")

main()

不能用hard code