**February 8th Problems**

Problem 1: Decode it!

For this problem, you will be given binary numbers and it will be your job to convert

that number to decimal form to then decode the given message. For the message, assume

that the number 1 corresponds to the letter 'a' and the number 26 corresponds to the

letter 'z' since there are 26 letters in the english alphabet.

a = 1 f = 6 k = 11 p = 16 u = 21 z = 26

b = 2 g = 7 l = 12 q = 17 v = 22

c = 3 h = 8 m= 13 r = 18 w = 23

d = 4 i = 9 n = 14 s = 19 x = 24

e = 5 j = 10 o = 15 t = 20 y = 25

Examples:

1000 101 1100 1100 1111

H E L L O

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a)

10011 10100 10010 1001 1110 111

b)

1001 1110 10100 101 111 101 10010

c)

10010 001 11001 10100 1000 101 1111 1110

Problem 2:

For this problem, you will be writing code that will take your name as input, print out your name, then move the last letter to the front of your string. Your code should repeat these steps until your name is back in the proper order, but only if the name the user supplies **does not** have any numbers in it. You should also print out the string it all caps.

**Example run:**

Please enter your name: Garrett

GARRETT

TGARRET

TTGARRE

ETTGARR

RETTGAR

RRETTGA

ARRETTG

GARRETT

**Another example run:**

Please enter your name: jason

JASON

NJASO

ONJAS

SONJA

ASONJ

JASON

Problem 3: Vowel Counter

For this problem, you are going to be writing code that will get a string as input, and go through that string to check how many vowels the string contained. Remember that vowels in english are a, e, i, o, and u.

Your program should print out how many total number of vowels the string has, and it should also print how many of each individual vowels there were.

NOTE: your code must be able to check all the vowels, not just lowercase vowels. ALSO, don't worry about the grammar being incorrect if there is only one ‘i’ lets say.

**Example run:**

Enter the string to check: THIS IS CHeckiNG how many VOWELS are here

This string has 12 vowels.

There are 2 ‘a’ vowels.

There are 5 ‘e’ vowels.

There are 3 ‘i’ vowels.

There are 2 ‘o’ vowels.

There are 0 ‘u’ vowels.

**SOLUTIONS**

**Problem 1:**

string

integer

raytheon

**Problem 2:**

import os

name = input('Please enter your name: ')

if name.isalpha():

name = name.upper()

i = 0

print(name)

while i < len(name):

last\_letter = name[-1]

name = name[:-1]

name = last\_letter + name

print(name)

i += 1

# try and explain why we don't HAVE to have an else here for checking if

# the input is valid.

os.\_exit(0)

**Problem 3:**

sentence = input('Enter the string to check: ').lower()

num\_a = 0

num\_e = 0

num\_i = 0

num\_o = 0

num\_u = 0

index = 0

while index < len(sentence):

if sentence[index] == 'a':

num\_a += 1

elif sentence[index] == 'e':

num\_e += 1

elif sentence[index] == 'i':

num\_i += 1

elif sentence[index] == 'o':

num\_o += 1

elif sentence[index] == 'u':

num\_u += 1

index += 1

total = num\_a + num\_e + num\_i + num\_o + num\_u

print('This string has', total, 'vowels.')

print('There are', num\_a, '\'a\' vowels.')

print('There are', num\_e, '\'e\' vowels.')

print('There are', num\_i, '\'i\' vowels.')

print('There are', num\_o, '\'o\' vowels.')

print('There are', num\_u, '\'u\' vowels.')