**Andrew Wang**

**Homework 6**

1. **A. Code:**

################

# Author: Andrew Wang

# Date: 10/26/2019

# This programs that writes a series of random numbers from 1 through 500 to a file and the user will

# input how many number will be inputed into file

#################

import random

#Main function

def main():

#Allows the user to input the total number will be inputed into file

number = int(input('Enter the number of random numbers to be written to the file: '))

#Writes the file

number\_file = open('number\_file.txt', 'w')

#For loop that inputs random number into file

for i in range(number):

random\_number = random.randint(1, 500)

number\_file.write(str(random\_number) + '\n')

number\_file.close()

#Calls main function

main()

**B. Code:**

################

# Author: Andrew Wang

# Date: 10/26/2019

# This programs reads the random numbers from the file user created and displays the total of the

# numbers in the file and also the number of random numbers read from the file.

#################

#Main function

def main():

#Reads the user-created file

number\_file = open('number\_file.txt', 'r')

#Reads the line of user-created file

line = number\_file.readline()

#Initializing index

count = 0

total\_num = 0

#While loop that reads the line of the file and calculates total number and number ead from file.

while line != '':

num\_file = float(line)

total\_num += num\_file

line = number\_file.readline()

count += 1

print('Total:', format(total\_num,',.0f'))

print('%.0f numbers were read from the file.' %count)

number\_file.close()

#Calls main function

main()

**Output:**

**A close up of a logo

Description automatically generated**

1. **Code:**

################

# Author: Andrew Wang

# Date: 10/26/2019

# This programs read the file and calcualtes the average number of steps taken for each month in the file.

#################

#Main function

def main():

#Reads the file

steps = open('steps.txt', 'r')

#Reads the line of the file

line = steps.readline()

#List for months and number of days for each month

days = [31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31]

month = ['January', 'February', 'March', 'April', 'May', 'June', 'July', 'August', 'September', 'October', 'November', 'December']

average = []

#For loop that adds the total number of steps and calculates the average

for i in range(len(days)):

total\_amt = 0

#For loop that adds the total number of steps for each number of days

for j in range(days[i]):

step\_amt = float(line)

total\_amt += step\_amt

line = steps.readline()

average.append(total\_amt / days[i])

print('The average steps taken in ' +month[i]+ ' was',format(average[i], ',.1f'))

#Calls main function

main()

**Output:**

**A screenshot of a cell phone

Description automatically generated**

1. **Code:**

################

# Author: Andrew Wang

# Date: 10/26/2019

# This programs reads the file and calculates the average number of words per centence

#################

#Main function

def main():

#Opens and reads the file

num\_words = open('average\_number\_of\_words.txt','r')

#Initializing index

word\_count = 0

line\_count = 0

#For loop that calculates the total sentences

for line in num\_words:

line\_count += 1

#For loop that calculates the total words in that sentence

for words in line.split():

word\_count += 1

print(word\_count)

print(line\_count)

print(word\_count / line\_count)

#Calls main function

main()

**Output:**

****

1. **Code:**

################

# Author: Andrew Wang

# Date: 10/26/2019

# This programs allows user to input a sentence and converts each word to Pig Latin.

#################

#Main function()

def main():

#Allows user to input sentence

string = input(str('Enter a string: '))

#For loop that removes first letter of the word to the back and adding 'ay'

for i in string.split():

first\_letter = i[0]

rest\_letter = i[1:]

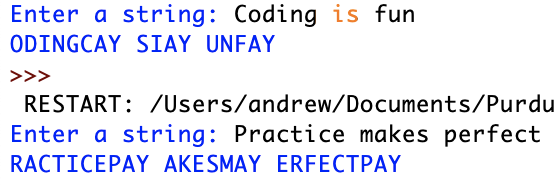
new\_string = rest\_letter+first\_letter+'ay'

print(new\_string.upper() + ' ',end='')

#Calls main function

main()

**Output:**

****

1. **Code:**

################

# Author: Andrew Wang

# Date: 10/26/2019

# This programs reads the file and displays the average annual change in population, the greatest

# increase in population, and the smallest increase in population during the time period

#################

#Main function

def main():

#Opens and reads the file

us\_pop = open('USPopulation.txt', 'r')

#Initializing variables

pop\_list = []

pop\_change = []

total\_pop = 0

#For loop that puts each line into a list

for line in us\_pop:

population = float(line)

pop\_list.append(population)

#For loop that calculates the change of population between year and previous year

for i in range(len(pop\_list) - 1):

pop\_change.append(pop\_list[i+1] - pop\_list[i])

total\_pop += pop\_change[i]

#Finds the when change of population is maximum/minimum

pop\_max = pop\_change.index(max(pop\_change)) + 1951

pop\_min = pop\_change.index(min(pop\_change)) + 1951

print('The average annual change in population during the time period is %.2f' %(total\_pop/(len(pop\_list) - 1)))

print('The year with the greatest increase in population was %.0f' %pop\_max)

print('The year with the smallest increase in population was %.0f' %pop\_min)

main()

**Output:**

**A screenshot of a cell phone

Description automatically generated**

1. **Code:**

################

# Author: Andrew Wang

# Date: 10/26/2019

# This programs allows user to enter 10-character telephon number with alphabetic characters and converts

# and displays the orginal telephone into numeric equivalent.

##################

#Main function

def main():

#Allows user to input telephone number

tele\_num = input(str('Enter the telephone number in the format XXX-XXX-XXXX: '))

#Spilts the telephone number into 3 sections

tele\_num = tele\_num.replace('-', ' ')

tele\_num = (tele\_num.split())

split\_num = []

#For loop that spilts each words into letters

for i in range(1, len(tele\_num)):

split = list(tele\_num[i])

#For loop that replace letter to number

for j in range(len(split)):

if split[j] == 'A' or split[j] == 'B' or split[j] == 'C':

split[j] = str(2)

elif split[j] == 'D' or split[j] == 'E' or split[j] == 'F':

split[j] = str(3)

elif split[j] == 'G' or split[j] == 'H' or split[j] == 'I':

split[j] = str(4)

elif split[j] == 'J' or split[j] == 'K' or split[j] == 'L':

split[j] = str(5)

elif split[j] == 'M' or split[j] == 'N' or split[j] == 'O':

split[j] = str(6)

elif split[j] == 'P' or split[j] == 'Q' or split[j] == 'R' or split[j] == 'S':

split[j] = str(7)

elif split[j] == 'T' or split[j] == 'U' or split[j] == 'V':

split[j] = str(8)

elif split[j] == 'W' or split[j] == 'X' or split[j] == 'Y' or split[j] == 'Z':

split[j] = str(9)

split\_num += split

#Combining replaced number

new\_num = split\_num[0] + split\_num[1] + split\_num[2] + '-' + split\_num[3] + split\_num[4] + split\_num[5] + split\_num[6]

print(tele\_num[0] + '-' + new\_num)

main()

**Output:** A screenshot of a cell phone

Description automatically generated