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# In this project we’ll only be considering population data.

# Brief programs for determining summary statistics of inputted data are written

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L = [] # Empty list for data

v = 1 # initialize a variable

print("you’ll be prompted to enter nonnegative integers. \n")

print('when you want to stop enter the word stop.')

while v == 1:

try:

l = int(input('Enter a nonnegative integer.'))

L.append(l)

except ValueError:

print('input halted.')

print('\n')

v = 0

print('you inputted the numbers listed', L)

print('\n')

#------------------------------------------------------

# below is the calculation of the mean.

s = sum(L) # The sum of the inputed numbers.

N = len(L) # The number of the numbers entered.

mean = s/N # The arithmetic average

print('The mean of the numbers is', mean , '.')

#---------------------------------------------------------

# Below is the calculation of the median.

# The numbers need to be sorted.

L.sort()

# Further it is relevant whether there is an odd number of numbers or an even numbers

if N % 2 == 0: # The even case

m1 = N/2

m2 = (N/2) + 1 # The two middle positions

m1 = int(m1)

m2 = int(m2) # Casting as integers

m1 = m1 - 1

m2 = m2 - 1 # Correct one off error

median = (L[m1] + L[m2])/2

else: # the odd case

m = (N + 1)/2

m = int(m) - 1

median = L[m]

print('The median of the numbers is ', median, '.')

print('\n')

#------------------------------------------------------------------------------

from collections import Counter

c = Counter(L) # Creates tuples list (element, frequency)

freq = c.most\_common() # most common method

max\_occur = freq[0][1] # The largest frequency assigned to max\_occur

if max\_occur != 1:

modes = [] # Empty List

for m in freq:

if m[1] == max\_occur: # looking for all frequencies the same as max\_occur

modes.append(m[0])

print('The mode(s) are: ', modes)

else:

print('There is no mode.')

print('\n')

#------------------------------------------------------------------------------

# Below is the calculation of the range.

highest = max(L)

lowest = min(L)

Range = highest - lowest

print('The range is. ', Range, '.')

print('\n')

#------------------------------------------------------------------------------

# Below is the calculation of the variance.

S = 0 # initial value of accumulator.

for n in L:

x = (n - mean)\*\*2

S = S + x

variance = S/N

print('The variance is. ', variance, '.')

print('\n')

#------------------------------------------------------------------------------

# Below is the calculation of the standard deviation

import math

standard\_deviation = math.sqrt(variance)

print('The standard deviation is. ', standard\_deviation, '.')

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