Christian Parsons
CS3001
HW1 – Python

Task 1 Programming Environment Setup

__X__ I certify that I have installed Anaconda or similar python environment and have practiced python by following the tutorial.

_____ I already know python and therefore I choose not to do this exercise. I understand that it is my own decision and I am responsible for all consequences.

Task 2 Python programming

a. Merge Sort
    a. https://github.com/cmparsons/cs3001/blob/master/hw1/mergesort.py
b. Summary Statistics
    a. https://github.com/cmparsons/cs3001/blob/master/hw1/summary_statistics.py
c. History with Rescale
    a. https://github.com/cmparsons/cs3001/blob/master/hw1/history_with_rescale.py

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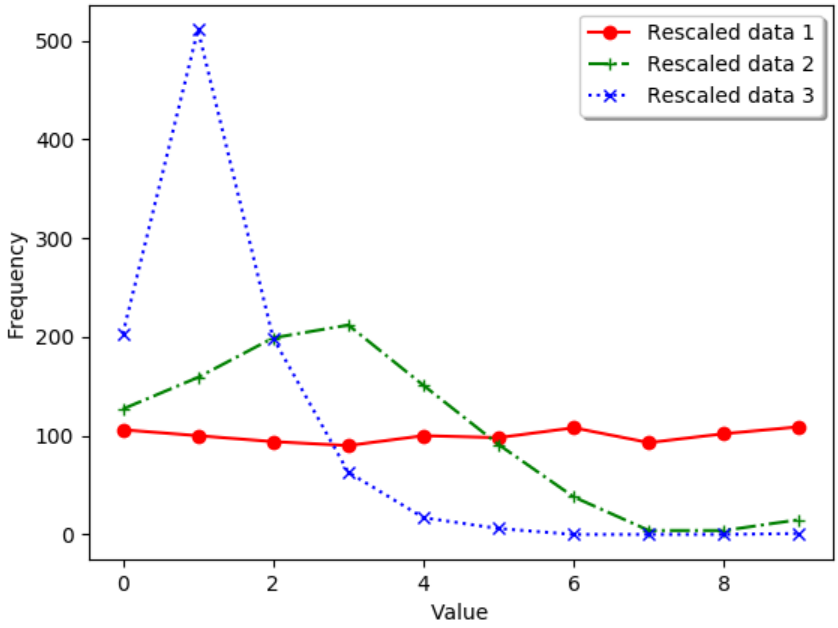
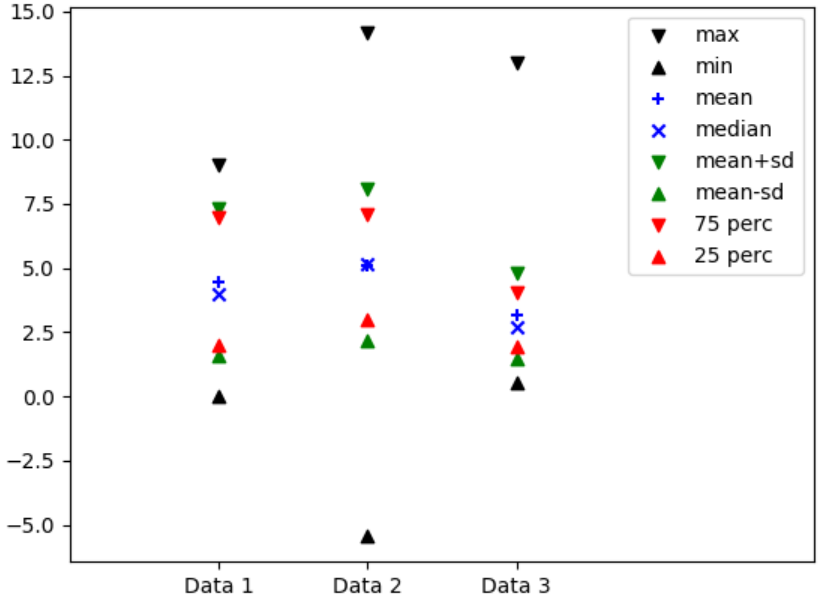
Task 3 Visualization





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Task 4 Numpy and Vectorized Computing

a. y = x[:, 2]; print (y)
    a. [3 7 11 15]
b. y = x[-1,:2]; print (y)
    a. [13 14]
c. y = x[:, [True, False, False, True]]; print(y)
    a. [[1 4]
     [5 8]
     [9 12]
     [13 16]]
d. y = x[0:2, 0:2]; print(y)
    a. [[1 2]
     [5 6]]
e. y = x[[0, 1, 2], [0, 1, 2]]; print(y)
    a. [1 6 11]
f. y = x[0]**2; print(y)
    a. [1 4 9 16]
g. y = x.max(axis=1); print(y)
    a. [4 8 12 16]
h. y = x[:2,:2]+x[:2,2:]; print(y)
    a. [[4 6]
     [12 14]]
i. y = x[:2, :3].T; print(y)
    a. [[1 5]
     [2 6]
     [3 7]]
j. y = x[:2, :3].reshape((3, 2)); print(y)
    a. [[1 2]
     [3 5]
     [6 7]]
k. y=x[:,:2].dot([1, 1]); print(y)
    a. [3 11 19 27]
l. y = x[:, :2].dot([[3, 0], [0, 2]]); print(y)
    a. [[3 4]
     [15 12]
     [27 20] [39 28]]