MSiA 490 – Winter 2017

Homework # 1

DUE: 1/13/2017

Exercise 1 – Procedural vs Functional Programming

Write a program (function!) that takes a list of mixed integers and strings. The function returns the Count of the integer's items and the word count of the strings items.

Write two different functions to do this - one using a loop (procedural) and constructing a list, and another using comprehension (functional).

Test your code using randomly generated lists (random numbers and random words with random order)

Use **TimeIt** standard library and **matplotlib** to present the performance difference among the 2 solutions for different list sizes.

***Example**: L = [2, 3, 'word', -1, 'python programming language', 9, 321]*

Count of Numbers: 5

Count of words: 4

Exercise 2 – Simple Grading System - memory based

In a given course the following:

- It has a number of students identified by a name and unique ID.
- Grades are based on:
  - 6 homework (10% each)
  - 2 projects (20% each)
- Final Grades based on final score (out of 100):
  - [90-100]:**A** ; [80-90): **B** ; [20-80): **C** ; [10-20): **D** ; [0-10): **F**

Create a data structure (dict!) to store the class related information.

Provide the system user with a console based **menu** as follows:

- Add Student (id and name)
- Add Student Grades
- Print a list of student names, final scores, and letter grades sorted by names.
- Print score summary (Student Count, Min, Max, Avg. , StdDev)
- Plot a pie chart showing the final letter grades distribution.
- Exit the system

** Make your own assumptions but usability counts*

** Functions and readability counts.*

** Only core python built-in data types.*

Exercise 3 -

Pick an extension library from **PyPI or other sources** (something of interest to you). Summarize the functionality provided by the library (one paragraph) and show a usage example.

Document step-by-step how to run the example provided.

PyPI: https://pypi.python.org/pypi