CS 224 Introduction to Python Spring 2019

Programming Assignment 1

University of Wisconsin – La Crosse *Due Date: February 18*

Lists and Files

Description: For this assignment, you will write a short Python program that gathers a data element from each of a number of data files. It will then determine the minimum and mean values for that data element and report them. The data represent runs of a traveling salesman algorithm. The data element we want to evaluate represents the length of the shortest path found during a run of the algorithm. Our goal, is to find the overall minimum and mean for a large number of runs of the algorithm.

Details: The zipped file you downloaded includes this assignment writeup and a directory called `datafiles` that includes approximately 100 directories. Each directory has a name of the form `run.xxx`, where `xxx` is an integer. You cannot depend on those integers being consecutive. Within each directory, there are several files. The file we are interested in has the name `run.xxx.runbest`, where `xxx` is the same integer as in the directory name.

Each `runbest` file contains a single line. Reading that line gives you a string. From that string, you must access the minumum distance, which is preceded by `F`. Here is an example line from one of the files:

```
G 1265 I 5091 L 55 F 79666.000 -1.000 ( 0, 7935) 5 4 18 50 47 15 32 12 11
10 36 35 51 1 40 41 42 16 7 34 9 8 33 20 26 0 28 27 29 30 38 17 37 31 24
21 25 39 49 3 48 2 13 6 54 19 52 53 23 22 43 46 45 44 14
```

In this example line, the value of interest is 79666.0. The rest of the line is not relevant for this assignment.

Your program should produce concise, easy-to-read output that conveys all required information: number of runs represented, minimum value, and mean value.

Adhere to common coding conventions and **comment your code.**. Include a comment at the top that looks like this:

```
#
# CS 224 Spring 2019
# Programming Assignment 1
#
# This program performs simple analysis of a data element across a
# large number of data files representing  runs of a traveling salesman
# algorithm.
#
# Author: Your name here
# Date: February 18, 2019
#
```

Submission: The name of your program should be `analyze.py`. Submit your solution as a compressed directory by 11:59 PM on the due date.