HLT – Fall 2020

Homework 1: Text Processing with Python

Objective: Use Python to process text.

Turn in: your Python .py file

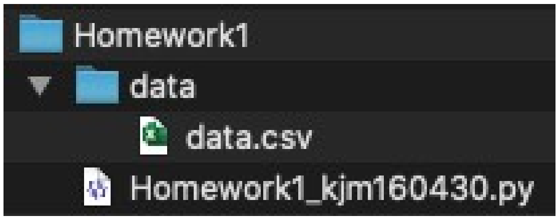
Scenario: An employee file has been created with an obsolete system. Your task is to read in the file, process the text to be more standardized as described below, create an object for each person with corrections from the user, and output each person's information.

Input: The input file (data.csv) looks like this.

```
Last,First,Middle Initial,ID,Office phone
Smith,Smitty,S,WH1234,5557771212
WILLIAMS,WITTY,W,S4454,555-877.4321
Luka,Luka,L,OF4321,555.888.3456
jason,jake,,WH409,555 777 2094
Krishna,krishna,k,SA9384,555 888 0093
```

Instructions:

1. Download the csv file from Piazza and place it in a folder named data within the same folder as your Python program. Here is a screen shot of the folder structure to make this clearer. Also, the grader would prefer that your uploads include your netid. For this homework, you will just upload the .py file.



2. The user needs to specify the relative path 'data/data.csv' in a sysarg. If the user does not specify a sysarg, print an error message and end the program. Read the file, making sure your program will work on either a Windows or Mac/Unix. See the Paths Demo in the Xtra folder of the GitHub: https://github.com/kjmazidi/NLP
3. Define a person class with fields last, first, mi, id, and phone. In addition to the init method, create a display() method to output fields as shown in the sample run below.
4. Create a function to process the input file. Get rid of the first line which is just the heading line. For the remaining lines:
   a. split on comma to get the fields as text variables
   b. modify last name and first name to be in Capital Case, if necessary
   c. modify middle initial to be a single upper case letter, if necessary. Use 'X' as a middle initial if one is missing.
   d. modify id if necessary, using regex. The id should be 2 letters followed by 4 digits. If an id is not in the correct format, output an error message, and allow the user to re-enter a valild ID. See the sample run below for data corrections.
   e. modify phone number, if necessary, to be in form 999-999-9999. Use regex.

        f. Once the data for a person is correct, create a Person object and save the object to a dict of persons, where id is the key. Check for duplicate id and print an error message if an ID is repeated in the input file.
        g. Return the dict of persons to the main function.

5. In the main function, save the dictionary as a pickle file. Open the pickle file for read, and print each person using the Person display() method to verifiy that the pickle was unpickled correctly. There is a sample pickle notebook in the Xtras folder in the GitHub.

Grading Rubric:

Element	Points
Appropriate comments, white space, functions	10
Step 1	10
Step 2	10
Step 3	10
Step 4	40
Step 5	20
Total	100

Sample run:

```
       ID invalid: S4454
       ID is two letters followed by 4 digits
       Please enter a valid id: SA4454
       Phone 555-877.4321 is invalid
       Enter phone number in form 123-456-7890
       Enter phone number: 555-877-4321
       ID invalid: WH409
       ID is two letters followed by 4 digits
       Please enter a valid id: WH5409


       Employee list:

       Employee id: WH1234
               Smitty S Smith
               555-777-1212

       Employee id: SA4454
               Witty W Williams
               555-877-4321

       Employee id: OF4321
               Luka L Luka
               555-888-3456

       Employee id: WH5409
               Jake X Jason
               555-777-2094

       Employee id: SA9384
               Krishna K Krishna
               555-888-0093

Process finished with exit code 0
```