Portfolio Assignment 1: Text Processing with Python

Objectives:

- Get comfortable in the Python coding environment of your choice
- Gain experience in coding a Python program that uses sysarg
- Gain experience in writing a simple class in Python
- Be able to code regular expressions for text processing
- Be able to code file I/O and pickling
- Reflect on what you learned in this coding assignment

Deliverables:

- Upload your .py program to eLearning for grading
- Upload your .py program to your GitHub portfolio, and link to it on your index page
    - Create a short overview of the assignment in the portfolio:
        - describe what the program does
        - explain how to run it
        - write a couple of sentences describing the strengths/weaknesses of Python for text processing, in your opinion
        - write a couple of sentences describing what you learned in this assignment, or what was a review for you

Scenario:

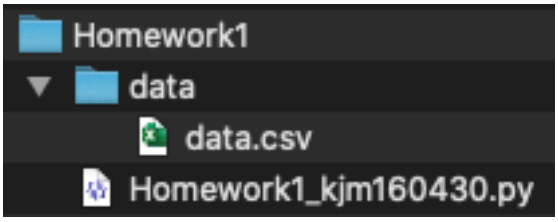
An employee file has been created in an obsolete system. Your task is to read in the file, process the text to be more standardized as described below, create an object for each person with corrections from the user, and output each person's information.

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 the GitHub 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, TAs from previous semesters told me they would



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prefer that your uploads to eLearning include your netid. You can name the Python file in your GitHub any name you wish.

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.
6. Make sure you have good comments in your code. Check the "Deliverables" section above.

Grading Rubric:

Element	Points
Step 1 Set up input file	5
Step 2 Set up sysarg for the file name	5
Step 3 Create the person class	10
Step 4 Process the text	60
Step 5 Pickle and print	10
Step 6 Comments in program; program overview in portfolio	10
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
```

- Note: Don't get bogged down in the specific instructions for the text processing. Feel free to use your own judgement as to the best way to process the text. What I have outlined above is the minimum, feel free to go farther.

Helpful Notebooks

- pickle: https://github.com/kjmazidi/NLP/blob/master/Xtra_Python_Material/pickle.ipynb
- file I/O: https://github.com/kjmazidi/NLP/blob/master/Part_1-Foundations/Chapter_02_intro_python/Python_Fundamentals/03%20-%20Files.ipynb
- using sysarg: https://github.com/kjmazidi/NLP/blob/master/Part_1-Foundations/Chapter_02_intro_python/Python_sample_code/example_singlefile.py

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