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Programming Assignment 3 (80 points)
Due date: July 18, 2016 at 11:55 PM

Assignment Overview

This assignment provides practice in defining and using functions. It also introduces some very basic file input.

Learning Objectives for this assignment include:

- Defining and calling a function
- Designing a program to use functions
- Passing arguments to functions
- Writing value returning functions for multiple values.
- Introduction to file input and output.
- Using loops to process files

Part 1: Financial Assistance [50 points]

A non-governmental organization needs a program to calculate the amount of financial assistance for needy families. The formula is as follows:

- If the annual household income is between $30,000 and $40,000 and the household has at least three children, the amount is $1,000 per child.
- If the annual household income is between $20,000 and $30,000 and the household has at least two children, the amount is $1,500 per child.
- If the annual household income is less than $20,000, the amount is $2,000 per child.

Implement a function for this computation. Write a program that asks for the household income and number of children for each applicant, printing the amount returned by your function. Use –1 as a sentinel value for the input.

Name the source code file "FinancialAssistance.py".

Sample run:

```
What is the household income (-1 to quit)? 35000
How many children? 3
The assistance amount is $3000.00.
What is the household income (-1 to quit)? 54000
How many children? 2
The assistance amount is $0.00.
What is the household income (-1 to quit)? 18000
How many children? 4
The assistance amount is $8000.00.
What is the household income (-1 to quit)? -1
```

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Part 2: Queries Information from Two Files [30 points]

Write a program that queries information from two files. The first file contains the names and telephone numbers of a group of people. The second file contains the names and Social Security numbers of a group of people. The groups of people should overlap but need not be completely identical. Your program should ask the user for a telephone number and then print the name and Social Security number, if it can determine that information.

Name the source code file "Query.py".

Sample run 1:

```
Enter the phone number (7 digits, with a dash): 555-1234
555-1234 is associated with Bob
Couldn't find a SSN for Bob
```

Sample run 2:

```
Enter the phone number (7 digits, with a dash): 555-3456
555-3456 is associated with Mark
Mark's SSN is 000000002
```

Extra Credit: Permuting The Characters in a String [15 points]

Translate the following pseudocode for randomly permuting the characters in a string into a Python program.
1. Read a word.
2. Repeat len(word) times
   a. Pick a random position i in the word, but not the last position.
   b. Pick a random position j > i in the word.
   c. Swap the letters at positions j and i.
3. Print the word.

To swap the letters, construct substrings as follows:
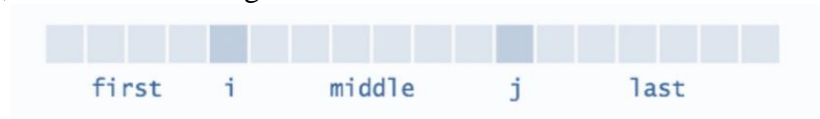
Then replace the string with first + word[j] + middle + word[i] + last

Name the source code file "Permutation.py".

Sample run 1:

```
Enter a word: California
The random permutation is ifarilCnoa
```

Sample run 1:

```
Enter a word: Francisco
The random permutation is aFcoiscrn
```

Assignment Notes

1. Don't forget to convert strings to numbers where appropriate.
2. Use the *rstrip* method to remove the newline character from a line of text.
3. Use the *split* method to split a string into individual words.
4. The call *inputFile.read()* returns a string with all characters in the file.
5. To open a file for output, remember:
    a. Open the file with the `'w'` mode string.
    b. You can only write strings to a file, so you must convert each output to a string before you write them.
    c. Also, remember that if you want a separate line to occur in your output file, you must specifically output the carriage return/line feed string `"\n"`.
6. When you specify a file name as a string literal, and the name contains backslash characters (as in a Windows file name), you must supply each backslash twice:
    infile = open("c:\\homework\\input.txt", "r") A single backslash inside a quoted string is an escape character that is combined with the following character to form a special meaning, such as \n for a newline character. The \\ combination denotes a single backslash. When a program user supplies a file name to a program, however, the user should not type the backslash twice.

Submission instructions:

1. README.doc (you must edit this and insert your own screen shot or a sample run of each program)
2. Include the standard program header at the top of your Python files.
3. Please be sure to use the specified file name.
4. You need to label your assignment with your first name initial, last name, and the name of the assignment. Example: hibrahim_assignment3.zip
5. Zip the files to upload to Canvas (hibrahim_assignment3.zip).
6. Submit the zipped file containing the following files:
    a. FinancialAssistance.py
    b. Query.py
    c. README.doc
    d. Permutation.py (extra credit)

Standard program header

Each programming assignment should have the following header, with italicized text appropriately replaced.

```
'''
 * Program #: Insert assignment name
 * Programmer: Insert your name
 * Due: Insert due date
 * CS 3A, summer 2016
 * Description: (Give a brief description for Assignment3)
```