CMPT 103 – Lab #6

General Information

Python Version and IDE: Python 3 / WingIDE 101 Allocated

Lab time: 2 hrs and 50 min

Due date: At the end of lab period

Lab weight: 3%

Topics
- ✓   Files
- ✓   Dictionaries

Submission

- ✓ **All the code files (.py) should be submitted electronically** to your Lab Blackboard site.

- ✓ A portion of the total marks (20%) will be allocated for the programming style. For example, functions should be small; names should be meaningful and descriptive; naming convention should be followed consistently; code should be formatted properly; and comments should be accurate and well written.

- ✓ Comments are **required** for:

  - o EACH program indicating the student name and program name.

  - o EACH function indicating the function purpose, syntax (example usage of the function), parameters, and return value.

  - o Any block of code for which the purpose may be unclear (Note: you should always try to write clean code that can be understood easily without comments).

Assignment

For this lab, please put all functions into a file called Lab6_XX.py (where XX is replaced with your initials).

1) [16 marks] Write a function called `open_file` that takes a string called `file_name` as a parameter. This function opens the file and returns a list of individual elements. You must use try and except to ensure that the file exists

and is readable. See examples at the end of this document.

2) [16 marks] Write a function called `build_dict` that takes a list called `names` as its parameter. This function builds and returns a dictionary with names as keys and the numbers of babies given each name as values. See examples at the end of this document.

3) [16 marks] Write a function called `how_many` that takes three parameters; two dictionaries (one with male names and the other female names) and a string which is the name requested by the user. This function returns 2 lists; a list of lists of lists of boys given the name entered with the counts and a list of list of girls with the counts. For example,

   if "Sandy" were entered, this function should return [['sandy', 1]], [ ]

   i.e. [['sandy', 1]] is a list of lists of males given the name "Sandy" and

   [ ] is a list of lists of females given the name "Sandy" – that is no females were given the name "Sandy"

   if "bobb*" were entered, this should return:

   [['bobby', 2], ['bobbi', 1]], [['bobbie', 1]]

   This function has 3 helper functions:
   `starts_with_asterisk, ends_with_asterisk, asterisk_in_middle`

   each of these has the following parameters:

   boy_name_list, girl_name_list, boy_dict, girl_dict, name_request

   and return nothing but modifies boy_name_list and/or girl_name_list

4) [14 marks] Write a function called `print_counts` that takes a list of babies with the name requested and their counts and the name requested by the user. This function prints the name and the number of babies, and the name entered by the user. See examples at the end of this document.

5) [12 marks] Write a function called `main` that takes no parameters. This function opens the text files, builds dictionaries of male and female names, asks the user to enter a name (must be case insensitive), determines how many boys and girls were given that name, and prints these counts. The user is asked to enter names until "Q" or "q" is entered. This function returns None. See examples at the end of this document.

NOTE: eSubmit will ignore whitespace but the output from your program should be similar to the sample output below. The evaluation by eSubmit will account for 74 marks, 6 marks will be assigned by your lab instructor on the format of your output, and 20 marks will be dedicated for commenting and programming style.

Sample output:

```
>>> main()
    The file 2016_Boy.txt does not exist or is not readable.

>>> main()
    The file 2016_Boy.txt does not exist or is not readable.
    The file 2016_Girl.txt does not exist or is not readable.


    Alberta 2016 Baby Name Search

    Enter a name to see how many babies were given that name
    in Alberta in 2016. An asterix may be used to indicate
    unknown letters (enter "Q" to quit):

            scatman

            There were no babies named Scatman in 2016

    Enter a name to see how many babies were given that name
    in Alberta in 2016. An asterix may be used to indicate
    unknown letters (enter "Q" to quit):

            sally

    Baby boys
            None

    Baby girls
            Sally 5

    Enter a name to see how many babies were given that name
    in Alberta in 2016. An asterix may be used to indicate
    unknown letters (enter "Q" to quit):

            Greg

    Baby boys
            Greg 1

    Baby girls
            None


    Enter a name to see how many babies were given that name
    in Alberta in 2016. An asterix may be used to indicate
    unknown letters (enter "Q" to quit):

            dela*

    Baby boys
            Delano 1

    Baby girls
            Delaney 11
            Delany 1
            Delayne 1
```

Enter a name to see how many babies were given that name
in Alberta in 2016. An asterix may be used to indicate
unknown letters (enter "Q" to quit):

        *mani

Baby boys
        Kymani 1

Baby girls
        Amani 3
        Armani 1
        Himani 1
        Imani 1
        Sukhmani 7

Enter a name to see how many babies were given that name
in Alberta in 2016. An asterix may be used to indicate
unknown letters (enter "Q" to quit):

        Kel*y

Baby boys
        Kelly 4

Baby girls
        Kelly 3
        Kelsey 11
        Kelty 1

Enter a name to see how many babies were given that name
in Alberta in 2016. An asterix may be used to indicate
unknown letters (enter "Q" to quit):

        q
Goodbye