**HOL 2: Strings, Lists, Tuples, and Dictionaries**

**PreLab**

**Readings, Insights, and Reflection**

* **METIS book: Chapter 4 and Chapter 5**

Fundamentals of Python: First Programs

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* **Websites:** 
  + <https://docs.python.org/3/contents.html>
  + [cplusplus.com/reference/list/list/?kw=list](https://cplusplus.com/reference/list/list/?kw=list)

**Questions**

For questions 1–6, assume that the variable data refers to the list [10, 20, 30].

1. The expression data[1] evaluates to
   1. 10
   2. 20
2. The expression data[1:3] evaluates to
   1. [10, 20, 30]
   2. [20, 30]
3. The expression data.index(20) evaluates to
   1. 1
   2. 2
   3. True
4. The expression data + [40, 50] evaluates to
   1. [10, 60, 80]
   2. [10, 20, 30, 40, 50]
5. After the statement data[1] = 5, data evaluates to
   1. [5, 20, 30]
   2. [10, 5, 30]
6. After the statement data.insert(1, 15), the original data evaluates to
   1. [15, 10, 20, 30]
   2. [10, 15, 30]
   3. [10, 15, 20, 30]

For questions 7–9, assume that the variable info refers to the dictionary {"name":"Sandy", "age":17}.

1. The expression list(info.keys()) evaluates to
   1. ("name", "age")
   2. ["name", "age"]
2. The expression info.get("hobbies", None) evaluates to
   1. "knitting"
   2. None
   3. 1000
3. The method to remove an entry from a dictionary is named
   1. delete
   2. pop
   3. remove
4. Which of the following are immutable data structures?
   1. dictionaries and lists

strings and tuples

**InLab**

* **Follow format of the provided Lab report template**
* **Each group will provide their own objectives and procedures in performing the lab exercise.**
* **Use the provided data files and source codes in your discussions. The group may just select**

**PostLab**

**[format of this section is same as InLab]**

1. Filename: **stats.py**

A group of statisticians at a local college has asked you to create a set of functions that compute the median and mode of a set of numbers, as defined in the below sample programs:

* [mode.py](https://mymailmapuaedu-my.sharepoint.com/:u:/g/personal/dapadilla_mapua_edu_ph/EWQI7kSWI-xFiYfm2KyofXoBBV_Zjex0RtarScWwn57pag?e=CD4HuL)
* [median.py](https://mymailmapuaedu-my.sharepoint.com/:u:/g/personal/dapadilla_mapua_edu_ph/EQ7kUrEOI0RIgplQhfEYnTABvArfAp403AaoreENtzVfgw?e=yo1hzy)

Define these functions in a module named **stats.py**. Also include a function named mean, which computes the average of a set of numbers. Each function should expect a list of numbers as an argument and return a single number. Each function should return 0 if the list is empty. Include a main function that tests the three statistical functions with a given list.

1. Filename: **LR2\_2.py**

Write a program that allows the user to navigate the lines of text in a file. The program should prompt the user for a filename and input the lines of text into a list. The program then enters a loop in which it prints the number of lines in the file and prompts the user for a line number. Actual line numbers range from 1 to the number of lines in the file. If the input is 0, the program quits. Otherwise, the program prints the line associated with that number.

1. Filename: **generator\_modified.py**

Modify the sentence-generator program of Case Study 5.3:

* METIS book: 9781337671019, page 150.
* Python source code: [generator.py](https://mymailmapuaedu-my.sharepoint.com/:u:/g/personal/dapadilla_mapua_edu_ph/EWb2bLxiCAROunKE_BC2ux8BFjuKrS3b-6YYBLrs5zDObw?e=YCZWOK)

so that it inputs its vocabulary from a set of text files at startup. The filenames are **nouns.txt**, **verbs. txt, articles.txt**, and **prepositions.txt**. (Hint: Define a single new function, getWords. This function should expect a filename as an argument. The function should open an input file with this name, define a temporary list, read words from the file, and add them to the list. The function should then convert the list to a tuple and return this tuple. Call the function with an actual filename to initialize each of the four variables for the vocabulary.)