CSCI-130 Assignment #4: Practicing Loops

Submit in Canvas by 11:59 PM on <u>Monday, October 12, 2020</u>

Note: This assignment is due AFTER the first exam, but it will help you study to work on it!

Description: Write a Python program (script) named **`LoopPractice.py`**

This assignment consists of a single program that you will write from scratch. However, it does not follow the IPO (Input-Process-Output) design we have used in assignments 2 and 3. This program will look more like what you wrote when seeing different ways of writing a loop (see videos and example code from 9/24/2020). It has four sections, and ***each section should start with comments describing what it does***. Details below:

- Start your program with 2 output lines (see example on next page) with your name and a line of hyphens.

A. Section A will use a loop to print a type of shirt (t-shirt, long-sleeve, short-sleeve… your choice) inside a phrase, exactly 4 times (in the sample output at the end of this document, you will see _____ in place of the type of shirt –**replace this with your chosen type of shirt**).

B. In section B, make a list of 5 (random – you choose the values) numbers, and use the loop to print each number, followed by the phrase `plus 5 equals` , followed by the number from that list *after you add 5 to it*. For an example of using a loop with a list, see page 44 of your textbook. (In my example output, my list contained the numbers 5, 9, 14, 7 and 6.) Note: before the loop, print the 3 heading lines seen in sample output.

C. In section C:
   a. ***Ask for an integer count value*** from the keyboard to tell this loop how many times to run. Each time it runs, you will print a number as well as the name of a tree.
   b. Before the loop, print the 3 heading lines seen in sample output. Notice that within the middle heading line, you should print the number entered in part C.a. explained above.
   c. Within the loop body, print the text plus the line number inside parentheses. Use `sep=''` in your `print()` statement so that you don't see extra space characters where you don't want them, such as inside each side of the parentheses.

D. The number of times the loop in section D runs will be *one more time* than the number entered for section C. So, for example, if you enter a 5 to indicate how many times the section C loop runs, section D's loop will run 6 times. Inside your loop, the code will keep adding numbers from the keyboard, and give a final total after the loop finishes.
   a. Before the loop begins, print the "Section D" heading line, then create a variable to hold the final result (initialize it to 100).
   b. Remember, this loop should run *one more time than* the number of times that the loop in Section C runs. You get to decide whether to create a new variable before the loop or alter how you write the range() part of the loop.
   c. Within the loop body:
      i. ask the user for a single digit number (match text seen in example on next page),
      ii. multiply that value by 10,
      iii. print the value you just calculated,
      iv. add that number from the variable you initialized to 100.
   d. *After* the loop finishes, print the final result number.

Be aware that I will try your code more than once … so after you try the example numbers (seen below), you should try different input values to see if it works correctly with those. *Notice that sometimes output lines*

contain extra text characters around the data... think about what gets printed before each loop, and inside the loop, each time. ***Make your output text look EXACTLY like what you see in the sample output – check spelling, spacing and notice where there are blank lines.***

1. Test your program by running it to see if the output looks as expected. Compare your output with what you see in the box below. *Hint: sometimes you will need to include an empty `print()` statement in your program to control the line spacing so it matches.*
2. Once the program is perfect, submit your `LoopPractice.py` file to Canvas by the deadline.
3. Please see me if you need any help (ahead of the deadline, of course ;-)!

Here is the sample output. As usual, the information I entered from the keyboard when I ran my program is written **bold and underscored**, to distinguish it from what the program prints:

```
FIRST LAST - Loop Practice Fall 2020
------------------------------------
----- Section A -----
Printing a type of table (4 times)
----------------------------------------
I wore a _______ shirt yesterday.
I wore a _______ shirt yesterday.
I wore a _______ shirt yesterday.
I wore a _______ shirt yesterday.

----- Section B -----
Demonstrate Printing Numbers Based on a List
--------------------------------------------
5 plus 5 equals 10
9 plus 5 equals 14
14 plus 5 equals 19
7 plus 5 equals 12
6 plus 5 equals 11

Enter times to print the name of a tree: 3

----- Section C -----
Printing a tree name (3) times
------------------------------
(1) Tree: _________
(2) Tree: _________
(3) Tree: _________

----- Section D -----
Starting from 100, will add 4 numbers.
Enter a single-digit number: 5
Value to add: 50
Enter a single-digit number: 6
Value to add: 60
Enter a single-digit number: 8
Value to add: 80
Enter a single-digit number: 2
Value to add: 20
Result after adding 4 numbers = 310
```

Stop by office hours for help if you need it!