Penn Engineering
ONLINE LEARNING

Assignment 4.5- Question 2: Loops

Summary

In this graded assignment, you will write Python programs that use loops to implement various algorithms.

Learning Outcomes

In completing this assignment, you will:

- Gain more experience converting an algorithm expressed using flowchart to one implemented in a Python program
- Write a Python program using loops

Description

An environmental engineer is monitoring the amount of rainfall in a particular South American jungle and wants to calculate the average rainfall based on a variety of sensor readings. However, some of the sensors produce incorrect data, so she will ignore any readings that are negative values, since those are obviously incorrect.

In this part of the assignment, you are asked to write a program that calculates the average of the non-negative numbers in a list, i.e., the numbers greater than or equal to 0.

The code that you write should follow lines 2 and 3 in the code that we have provided, which create the list of numbers and initialize the average to 0. Write your code starting at line 5 (you can remove the comments starting at line 5, and may need more space than what is provided), and be sure that the value of “average” is correctly set before the code reaches the “return average” statement on line 10. As before, be sure that your code is indented and that you all your code comes before “return average”.

Also, keep in mind that the goal here is to write a program that would find the average of the non-negative values of **any** list, not just the one provided on line 2. That is, don’t simply calculate the average by hand and then set average to hold that value, but rather write a program that implements the algorithm.

```
1   def test() : # do not change this or the next line!
2     numbers = [11.5, 28.3, 23.5, -4.8, 15.9, -63.1, 79.4, 80.0, 0, 67.4, -11.9, 32.6]
3     average = 0
4
5     # write your code here so that it sets average
6     # to the average of the non-negative numbers
7     # be sure to indent your code!
8
9     print(average)
10    return average # do not change this line!
11    # do not write any code below here
12
13  test()  # do not change this line!
14  # do not remove this line!
```

As before, you can test your program by clicking the “Run” button to the right of the code to see the results of any “print” statements, such as the one on line 9 which prints the average before ending the function. However, please be sure that you do not modify the last two lines of the code block.

Hints

- *You may want to draw the flowchart for this algorithm before you start coding, and you may also want to write the pseudocode, which -- as you saw in the previous activity -- is often very similar to the Python code.*
- *As in previous activities, don’t forget that you can use the “print” function to print out intermediate values as your code is performing operations so that you can see what is happening.*

After you have run your programs using the “Run” button and believe that they are producing the correct output, accept the terms of the Coursera Honor Code and then click the “Submit Quiz” button below to submit this assignment and have it graded.

A few seconds after you submit the assignment, you will see the result at the top of the screen. If it reads “Congratulations! You passed!” then you are ready to proceed to the next lesson.

However, if it reads “Try again once you are ready.” then this means that the automatic grading program indicated that your program is not correct. You can find the error message from the grading program beneath your code. In that case, click the “Retake” button to go back to the quiz and try again.

If you believe that your code was correct, be sure to click the “Run” button before submitting and inspect the result of the “print” statement that is right before the “return” statement. This allows you to see the output that your code is producing before it is evaluated. If it looks right, but the automatic grading utility is still indicating that it is incorrect, then post a message on the discussion board to ask for assistance, but please do not post your code so that you do not reveal your solution to other learners.