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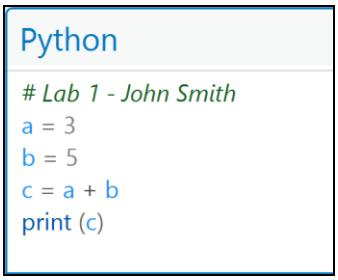
GEOG 4590/5590 – Advanced GIS Programming

Lab 1. Python Review (1)

The objective of this lab is to review some basics of Python.

Step 1. Open a new Word document and save it as YourLastName_FirstName_Lab1.docx in your lab folder on your computer, for example "Smith_John_Lab1.docx". You should type your answers and/or paste screenshots into the Word document. To copy the whole screen to the document, press the PrtScn (print screen) key on your keyboard, then move to your Word document and click the "Paste" button or press Ctrl+V. To capture an active window, use Ctrl+PrtScn. You may need to install a screen capture software if your keyboard does not have these shortcuts. Don't forget to save your Word document.

Step 2. You can use the Python window in ArcGIS Pro or PyCharm to complete this lab. **Please include your name (e.g. John Smith) in the comment line**. See example below.



Insert screenshots of your Python code for the following questions in your Word document.

Question 1: Write a Python program to calculate 1+ 2 + 3 + … + 100. Please do not use the formula sum = n(n+1)/2.

Question 2: You are counting 1000 apples. Print a message when you have completed 10%, 20%, 30%, …, 90%, 100% of the apples. (This is useful when you process a large dataset and want to monitor the progress of the program. **Hint**: Use the modulus/remainder operator)

Question 3: myStringList = ["This is a GIS class"]. Write several lines of Python code to count the occurrences of "s" (lowercase) in myStringList.

Question 4: For every five numbers in the following list from left to right, calculate the means of every five numbers. inputList = [2, 1, 3, 5, 2, 7, 3, 7, 4, 6, 9, 1, 0, 2, 4, 8, 9, 2, 0, 1, 3]. For example, the first five numbers are 2, 1, 3, 5, and 2, and the mean is 2.6; the second five numbers are 1, 3, 5, 2, and 7, and the mean is 3.6. Once the input list is provided, your code should read numbers from the list automatically, without any user input.

Question 5: Similar to Question 4, for every five numbers in the following list from left to right, calculate the medians of every five numbers. inputList = [0, 1, 9, 2, 2, 8, 3, 0, 4, 5, 9, 1, 0, 2, 4, 5, 9, 2, 1, 0, 6]

(**Note**: Questions 4 and 5 can be useful for data smoothing. Imagine you are processing a satellite image – the mean or median of every 9 pixels in 3 x 3 windows can be calculated to produce smoothed images. This will be introduced later this semester.)

Save your Word document, then submit it to Canvas.