Lab 3 – Print Triangles

Goals

- Familiarity with variables
- Familiarity with if and if/else statements
- Learn how to use the random library
- Learn how to cast variables as different data types
- Understanding of Python input and output

Setup

- When you rename the skeleton code, use the following naming convention
  `ITP115_l#_lastname_firstname`
  (replace # with this lab number)
- Your new file must begin with comments in the following format *(replace the name and email with your actual information):*

```
# Name
# ITP 115, Fall 2016
# Lab L^ (replace ^ with this lab number)
# USC email
```

Requirements

Your program must perform the following:

- Write a program that uses a **while** loop to produce a triangle.
- Triangle should be 10 lines tall
- In order to **center** the triangle, you will need to include initial spaces on each line
- Bottom row of triangle has 19 **^** symbols
- Between every **^** symbols is a single **space**
- Hint #1:
  - You can use the * to repeat strings. For example,
    `print("hello" * 4)`
    will print
    `hellohellohellohello`
- Hint #2:
  - You need at least one while loop to control how many rows to print
  - You will most likely need two counters:

- **numSpaces** to track initial spaces on each line
- **numSymbols** to track how many symbols are printed on each line

Sample Output

```
                    ^
                  ^ ^ ^
                ^ ^ ^ ^ ^
              ^ ^ ^ ^ ^ ^ ^
            ^ ^ ^ ^ ^ ^ ^ ^ ^
          ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^
        ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^
      ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^
    ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^
  ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^
```

Here is an alternate way to visualize the triangle. The initial spaces are represented as **+** symbols and the inner spaces are represented as _

```
++++++++++++++++++_^
++++++++++++++++_^_^_^
++++++++++++++_^_^_^_^_^
++++++++++++_^_^_^_^_^_^_^
++++++++++_^_^_^_^_^_^_^_^_^
++++++++_^_^_^_^_^_^_^_^_^_^_^
++++++_^_^_^_^_^_^_^_^_^_^_^_^_^
++++_^_^_^_^_^_^_^_^_^_^_^_^_^_^_^
++_^_^_^_^_^_^_^_^_^_^_^_^_^_^_^_^_^
```

_^_^_^_^_^_^_^_^_^_^_^_^_^_^_^_^_^_^_^

Deliverables and Submission Instructions

- A compressed folder (zip file) containing you Python code. This can be done by:
    a. Windows *(you must find the folder on your computer—this can't be done within PyCharm):*
        i. Select your lab file
        ii. Right click
        iii. Send to ->
        iv. Compressed (zipped) folder
        v. Rename this folder with the following name:
            `ITP115_l#_lastname_firstname`
            (replace # with this assignment number)
        vi. Submit this zipped folder through Blackboard
    b. OSX *(you must find the folder on your computer—this can't be done within PyCharm)*:
        i. Select your lab file
        ii. Right click
        iii. Compress 1 item
        iv. Rename this folder with the following name:
            `ITP115_l#_lastname_firstname`
            (replace # with this assignment number)
        v. Submit this zipped folder through Blackboard