

Lab 3-1 – Print Triangles

Goals

- Practice using a while loop

Setup

- In PyCharm, create a new project or open an existing one (such as Labs)
- Create a new Python file using the following naming convention:
ITP115_L3_1_LastName_FirstName
(replace *LastName* with your last/family name and *FirstName* with your first name)
- Your new file must begin with comments in the following format (replace the *name* and *email* with your actual information):

```
# Name, USC email  
# ITP 115, Spring 2020  
# Lab 3-1
```

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

```

      ^
    ^ ^ ^
  ^ ^ ^ ^ ^
^ ^ ^ ^ ^ ^ ^
^ ^ ^ ^ ^ ^ ^ ^ ^
^ ^ ^ ^ ^ ^ ^ ^ ^ ^
^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^
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^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^
^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^
^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^

```

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

```

+++++++^
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```

Deliverables and Submission Instructions

- Create a zip file containing your Python code. This cannot be done within PyCharm. Find the file or folder on your computer and compress it.
 - a. Windows:
 1. Using File Explorer, select your lab file
 2. Right click
 3. Send to ->
 4. Compressed (zipped) folder
 - b. Mac OSX:
 1. Using Finder, select your lab file
 2. Right click
 3. Compress "*FileName*"
- Upload the zip file to your Blackboard section:
 1. On Blackboard, click on the Labs item in the course menu on the left.
 2. Click on the specific item for this assignment (starts with L and a number).
 3. Click on the Browse My Computer button and select your zip file.
 4. Click the Submit button.