COM S 127 - Lab Week 4 Grading Rubric

This lab was assigned for week 4 of the Fall semester.

This lab is due by 11:59 p.m. of the sixth day after the student's initial lab meeting day.

Lab Objective

The purpose of this lab is for students to work with conditional logic and to become more familiar/ comfortable with the `if`, `else`, and `elif` keywords as they are applied to logical problem solving.

Instructions

Submission 'Check Offs'

For students to receive credit for their lab work, they must 'check off' their exercises with either the Graduate TA or Undergraduate TA (UGTA) for their lab section. If the lab cannot be completed during the assigned lab hours, the student **MUST** attend a Graduate TAs office hours to complete the 'check off' process and receive credit for their work.

This means that **STUDENTS WILL NO LONGER BE ABLE TO SUBMIT THEIR WORK ON CANVAS**. As such, **all work MUST 'checked off' in person.**

Important Notes:

All scripts should include the student's name and the date they programmed the script on the top line of the file. The student should also include the week of the lab, and the exercise number on the second line. Example:

```
# <Student Name>          <The Date>
# Lab Week <week of the lab> - Exercise #<exercise number>

# Matthew Holman          9-12-2022
# Lab Week 4 - Exercise #2
```

Readings:

conditional logic

- 7.1. Boolean Values and Boolean Expressions
- 7.3. Precedence of Operators
- 7.4. Conditional Execution: Binary Selection
- 7.5. Omitting the else Clause: Unary Selection
- 7.6. Nested conditionals
- 7.7. Chained conditionals

Lab Challenge Activities:

Create a single script called **pythonConditionalResults.py**, which **prints** out the results of the Python statements found in the **labWeek4ConditionalLogic.pptx** file.

- To facilitate learning, students should attempt to determine the output by hand before programming/ running the script, and should print out their initial hand computed answer.
    - **THIS INCLUDES EVALUATING EACH SIDE OF EACH EXPRESSION AND PRINTING**

WHAT EACH OF THESE SUB-EXPRESSIONS EVALUATE TO.
    - Please note: the student's hand computed output is just for learning purposes, and will not be evaluated as a part of the grade. Meaning - if the student gets an incorrect hand computed result, that will not impact the final grade.
- Students should also print out the answer the computer provides.
    - See the **Example Output** section for details.
- Please note: **all** of the exercises from **this** portion of the lab should appear in the **pythonConditionalResults.py** file. The exercises **below** should each appear **in their own files**.

Create a script called **exercise1.py**, such that it completes the task in **Exercise 1** on **slide 7** of the **labWeek4ConditionalLogic.pptx** file.

Create a script called **exercise2.py**, such that it completes the task in **Exercise 2** on **slide 8** of the **labWeek4ConditionalLogic.pptx** file.

Create a script called **exercise3.py**, such that it completes the task in **Exercise 3** on **slide 9** of the **labWeek4ConditionalLogic.pptx** file.

Deliverables:

Show the table of contents of the Runestone textbook to a Graduate TA/ UGTA with green 'check marks' next to the relevant sections noted in the **Readings** section of this document once that reading is complete.

Create a script called **pythonConditionalResults.py** which completes the tasks laid out in the **Lab Challenge Activities** section of this document.

Create a script called **exercise1.py** which completes the tasks laid out in the **Lab Challenge Activities** section of this document.

Create a script called **exercise2.py** which completes the tasks laid out in the **Lab Challenge Activities** section of this document.

Create a script called **exercise3.py** which completes the tasks laid out in the **Lab Challenge Activities** section of this document.

Create a script called **exercise4.py** which completes the tasks laid out in the **Lab Challenge Activities** section of this document.

All the deliverable scripts and the Runestone table of contents should be shown to a Graduate TA/ UGTA

Resources:

Official Python Tutorial (if Statements): https://docs.python.org/3/tutorial/controlflow.html#if-statements

Math Module Reference: https://docs.python.org/3/library/math.html

Example:

```
# Matthew Holman          9-1-2022
# Lab Week 3 - Math Module example

import math

print(math.sqrt(17))
```

Files Provided

- labWeek4ConditionalLogic.pptx

Example Code/ Output

pythonConditionalResults.py code:

```
# Print the number of the question:
print("Question 1:")
print()

# Initial hand computer answer:
print("Hand Computer Answer: False")
print("x * x * x + y = {0}".format(355))
print("y * x + 47 = {0}".format(131))

# Question from the slides:
x = 7
y = 12

if x * x * x + y == y * x + 47:
    print("Computer's Answer: True")
else:
    print("Computer's Answer: False")

print("x * x * x + y = {0}".format(x * x * x + y))
print("y * x + 47 = {0}".format(y * x + 47))

# Dividing line and white space break for readability
print("-----------------------------------------")
print()
```

pythonConditionalResults.py output:

```
Question 1:

Hand Computer Answer: False
x * x * x + y = 355
y * x + 47 = 131
Computer's Answer: False
x * x * x + y = 355
y * x + 47 = 131
-----------------------------------------
```

exercise1.py output:

```
Input a float for the length: 3
Input a float for the height: 3
This rectangle is a square with perimeter 12
```

exercise2.py output:

```
Input a float for ‘a’: 1
Input a float for ‘b’: 0
Input a float for ‘c’: 0
Input a float for ‘x’: 4
Input a float for ‘y’: 16
The point (4, 16) lies on the parabola described by the equation: y = 1 * x ** 2 + 0 * x + 0
```

exercise3.py output:

```
Input a float for x1: 0
Input a float for y1: 0
Input a float for x2: 5
Input a float for y2: 0
The line described by points (0, 0) and (5, 0) is horizontal.
```

exercise4.py output:

```
Input a float for m1: 0
Input a float for m2: 0
The lines with slopes m1: 0 and m2: 0 are parallel
```

Grading Items

- (**Attendance**) Was the student present at the lab or had made arrangements to attend virtually?: _____ / 5
- (**Runestone Academy Reading**) Has the student demonstrated that they have completed their Runestone Academy reading by showing a Graduate TA/ UGTA the table of contents with green 'check marks' next to the relevant completed sections?: _____ / 5
- (**pythonConditionalResults.py**) Did the student successfully complete a script which generates correct output as per the **Lab Challenge Activities** section and the **Example Code/ Output** section? _____ / 4
- (**exercise1.py**) Did the student successfully complete a script which generates correct output as per the **Lab Challenge Activities** section? _____ / 4
- (**exercise2.py**) Did the student successfully complete a script which generates correct output as per the **Lab Challenge Activities** section? _____ / 4
- (**exercise3.py**) Did the student successfully complete a script which generates correct output as per the **Lab Challenge Activities** section? _____ / 4
- (**exercise4.py**) Did the student successfully complete a script which generates correct output as per the **Lab Challenge Activities** section? _____ / 4

TOTAL _____ / 30