CS 65
Fall 2025

Lab 4: While Loops

Due: Thursday, October 16th
Total points: 4

In this lab, you are going to practice working with loops, and count-controlled loops. First, create a file called Lab4Exercises.py and experiment with the following exercises:

Exercise 1: Consider the guess-my-number code we looked at in the lecture. When the user guesses wrong, add some code that will tell them whether they were too high or too low. (*Hint:* add a new conditional statement (or change the exiting one) in the indented part of the code). To make this a little more fun, instead of just hard-coding the secret number as 7, we'll generate a random number between 1 and 100.

```
import random

secret_number = random.randint(1,100) #this will generate a random integer between 1 and 100
guess = 0
guess_counter = 0

while guess != secret_number:
    guess = int(input("Guess a number: "))
    guess_counter += 1 #this is the same as guess_counter = guess_counter + 1

    if guess == secret_number:
        print("That was right, good guess!")
    else:
        print("Wrong!")

print("That took",guess_counter,"guesses")
```

The output might look like this:

```
>>> %Run Lab4Exercises.py
  Guess a number: 50
  Wrong! Too low.
  Guess a number: 75
  Wrong! Too high.
  Guess a number: 62
  Wrong! Too high.
  Guess a number: 57
  Wrong! Too high.
  Guess a number: 53
  Wrong! Too low.
  Guess a number: 55
  Wrong! Too low.
  Guess a number: 56
  That was right, good guess!
  That took 7 guesses
```

Exercise 2: Write a program that asks the user how many times they would like to be greeted, and then use a loop to say "Hello" that many times.

```
>>> %Run Lab4Exercises.py
  How many times would you like to be greeted? 7
  Hello!
  Hello!
  Hello!
  Hello!
  Hello!
  Hello!
  Hello!
```

Create a file called Lab4.py for the challenge exercise.
Challenge Exercise: Write a program that first asks the user the limit for the number they want to use in their loop. Secondly, ask the user for the amount they want to add to the loop variable each loop. The output should be the loop variable (starting at 0) counting by the increment amount, until (and including) the limit.

```
>>> %Run Lab4.py
  What is the limit? 5
  What is the increment? 1
  0
  1
  2
  3
  4
  5
```

```
>>> %Run Lab4.py
  What is the limit? 5
  What is the increment? 2
  0
  2
  4
```

```
>>> %Run Lab4.py
What is the limit? 99
What is the increment? 12
0
12
24
36
48
60
72
84
96
```

Hints:

- You'll likely need 3 different variables for this problem:
    - a variable to keep track of the `limit`
    - a variable to keep track of the `increment`
    - a variable to keep track of the `number` you will output; the `number` should start with the value of 0
- Loop *while* the `number` is less than or equal to the limit
- Within the loop, add the value of the `increment` to the number

When you are finished, submit your solution to the **Lab 4** assignment on Xuexitong (Chaoxing Fanya). **Also, make certain that your name appears in comments at the top of your code. Points will be deducted starting in this lab.**