Homework 3
So Many Loops
Due October 7, 2022 at 5pm
(or October 6, 2022 at 5pm for 5% extra credit)

In this homework, you will be doing a series of exercises designed to make you practice using loops. Each one of these should be in a separate Python file. For this assignment, you may assume that all the input you get will be of the correct type.

Learning Goals

1. Create and use while loops.
2. Create and use for loops.
3. Use both loops over lists.
4. Identify and fix errors.

The Assignment

Write four small programs to do the following four tasks. For each program, you must prompt politely for input and print out the answer in an explanatory sentence. Each program you write **must** use a loop!

1. **hw3a.py** Write a small program that will prompt the user to enter a number repeatedly until they enter 'end'. Your program should prompt the user for at least once. Users might input either an integer or a float; you don't need to differentiate. You may assume that all input will be either a number or the word 'end'. When 'end' is entered, you should report out the largest number entered.

Sample output (user responses in bold):

```
Enter a number (or 'end' to end): 2
Enter a number (or 'end' to end): 4
Enter a number (or 'end' to end): 5
Enter a number (or 'end' to end): stop
The largest number is 5!
```

2. **hw3b.py.** Write a program that gets two integers from the user and then prints the numbers from the first to the second (inclusive), one per line. If the year with that number is a leap year, print a message saying so. The leap years are those years that are divisible by 4 (except for those divisible by 100, but not 400). Use range () in your program.

Here is some partial sample output:

```
bash-4.1$ python hw3b.py
What is the first year? 1990
What is the last year? 1997
```

```
      1990
      1991
      1992 is a leap year!
      1993
      1994
      1995
      1996 is a leap year!
      1997
```

3. hw3c.py Examine the contents of a list, using len() and range(). Given a list, print out the element index and contents for each element. Your program should initialize the list of your choice and then print out the contents in the format specified. At the end, claim that the middle entry is your favorite (round down if the list is even). For example, given the list:

    monsters = ["Squirtle","Venonat","Eevee", "Cherim","Bronzong","Bergmite"]

Sample output would be:

```
The monster list is:
0: Squirtle
1: Venonat
2: Eevee
3: Cherim
4: Bronzong
5: Bergmite
My favorite is Eevee!
```

4. hw3d.py Write a small program that asks the user for two numbers (x, y). For each number from 1 to x (inclusive), print the first y multiples of that number on the same line. Keep repeating this action until the user inputs any negative number.

```
Hello, what are your numbers? 3 4
1 2 3 4
2 4 6 8
3 6 9 12
Hello, what are your numbers? 1 1
1
Hello, what are your numbers? 0 1
Hmmm. Nothing to see here.
Hello, what are your numbers? -1 1
Goodbye
```

How to turn in your homework
Turn in each program in its own file. When turning in your own assignment make sure to add your last name to the file name (for example: Rheingans_hw3a.py).