CIT 590: Fall 2018
Homework 1

HW deadline as per Canvas.

This homework deals with the following topics:

- variables & data types
- conditionals

This HW is deliberately made up of multiple small exercises. None of these questions are particularly time consuming. They are designed to give you practice working with variables and conditionals.

Questions

You do not need to import any extra modules for this assignment.

Be sure to add comments to all of your code, where appropriate (for non-trivial code).

1. What is the following program doing? Copy the code by typing it into a file named *Q1.py* and write your answer in Python comments. Do not worry about non-integer inputs for this question.

   Try writing the answer to this without actually running the program. On the midterm and final exam, you will not have access to a computer to write or run code, and you will have to decipher things like this, so it's worth practicing early.

   If you think there is an error in this program, feel free to note that in your comments as well.

   ```
   x = input('give me an input ')
   y = input('give me another input ')
   print(x + (2 * y) + x)
   ```

2. What is the following program doing? Copy the code by typing it into a file named *Q2.py* and write your answer in Python comments. Do not worry about non-integer inputs for this question.

   ```
   x = input('give me an input ')
   y = input('give me another input ')
   y = int(y)
   print(x + str(2 * y) + x)
   ```

3. Write a program that asks the user to input an integer. The program first checks if the user entered an integer, then checks to see if the integer is even or odd. It prints the word 'Even' if even, and the word 'Odd' if odd. Name your program *Q3.py*.

4. Write a program that asks the user to input an integer. The program first checks if the user entered an integer, then checks to see if the integer is within 10 (including 10 itself) of 100 or 200. If that is the case, the program is going to print 'Yes', else it will print 'No'.

   For example, 90 should print 'Yes'. 209 should also print 'Yes'. 189 should print 'No'.

   Name your program *Q4.py*.

5. A game (it actually gets used sometimes for screening programmers in tech interviews) called 'Fizz Buzz' is the origin for this next question.

   Write a program that asks the user to input a positive integer. Check if the user entered a positive integer. If the number is divisible by 3, your program should print 'Fizz'. If the number is divisible by 5, your program should print 'Buzz'. If the number is divisible by 3 and 5, your program should print 'Fizz Buzz'. Finally, if none of these conditions are satisfied, your program should print the number itself.

   Note that the program should only print one thing. For example, if the user enters 30, it should only print 'Fizz Buzz'.

   Name your program *Q5.py*.

6. Ask the user for two integers. First check if both are integers. If both values are in the range 30 to 40 (inclusive) or if both values are in the range 40 to 50 (inclusive), print "Yay" else print "Nay".

   Name your program *Q6.py*.

7. Write a program to calculate a dog's age from a human age. Ask the user for their age. Allow for float values but check the user's input. For the first 2 years, a dog year is equal to 10.5 human years. After that, each dog year equals 4 human years. Print the result in the format: "The human's age in dog years is ..."

   Make sure you take into account the possibility of a user inputting a negative age. In this case the program should print "Age must be a positive number." instead of the dog's age.

   Name your program *Q7.py*.

8. The National Weather Service uses the following formula to calculate windchill:

   $T_{wc} = 35.74 + 0.6215T_a - 35.75v^{0.16} + 0.4275T_a v^{0.16}$

   where T_{wc} is the wind chill temperature (feels like), T_a is the air temperature in degrees F, and v is the wind speed in mph. Note, this only applies for temperatures below 50F and wind speed above 5 mph.

   Write a program that asks the user for the temperature and wind speed and gives them a wind chill temperature. Round to two decimal places. If the user gives you a temperature or a wind speed for which the formula is not applicable, give them a message that politely tells them why it does not make sense to calculate wind chill (too hot and/or no wind). Allow for input of float values but check the user's input.

   Name your program *Q8.py*.

9. Download and debug *Q9.py*. Correct the errors and reupload the file.

10. Download and debug *Q10.py*. Correct the errors and reupload the file.

Submission

Submit a single zip file with all of the script files above. Your TA will unzip and grade them.

Evaluation

Correctness - 10 pts

Does the code work as expected? Please note that we will not be running your code on any horrible inputs.

Comments - 5 pts

Are all non trivial lines of code commented?