DSCI 510  
Fall 2020

Homework #1 (100 points)

DUE Tuesday, 9/15 at 11:59PM, submitted via the course website.

*The first thing to note, is that this assignment is to be turned in via Python script files and text files,* ***not*** *Jupyter notebooks. That doesn’t mean you can’t do whatever development and debugging you’d like in a notebook, but your final submission deliverable is a zip file to be called [YOUR\_FIRSTNAME]\_ [YOUR\_LASTNAME]\_homework1.zip. For me, I would turn in a file called JEREMY\_ ABRAMSON\_homework1.zip.*

*In this zip file should be 5 files, named firstname\_lastname\_1.py (i.e. jeremy\_abramson\_1.py, jeremy\_abramson\_2.py and so on)*

You may lose points if you do not follow the submission procedure.

**Question 1 (15 points)**

Assuming you typed the following in your Python interpreter:

ten = 1

one = 10

zero = 1

tenplusone = "ten" + "one"

What is the output of the following:

a). print(ten + one)

b). print(ten + 1)

c). print (one - 1 \* zero - 0 + 10 \*\* ten)

d). if zero - 1:

    print('ten')

e). print(int(one) \* 10 % 1 / int(ten) + 1 \*\* 10)

f). print('tenplusone' + tenplusone + 'ten' + one)

**Question 2 (10 points)**

Fill in the following blanks, one per line:

a). Python is a \_\_\_\_\_\_\_\_ typed language

b). Values from the *input()* function in Python are returned as \_\_\_\_\_\_\_\_

c). The value of: True or not False and not True or False or "True" and "False" and "Frank"

is \_\_\_\_\_\_\_\_

d). Building a skeleton with stubs is an example of the \_\_\_\_\_\_\_\_\_\_ programming paradigm

e). Which function tells you the type of a Python object? \_\_\_\_\_\_\_\_\_

**Question 3 (10 points)**

You are to design a guessing test that generates a random integer number between 1 and 10 and repeatedly prompts the user for a guess, at each time indicates if the guess is lower or higher than the randomly generated number. When the user guesses correctly, the program should terminate and indicate the number of tries the user took to guess the number correctly.

Write out in how you would solve this problem. You can use full English sentences, pseudo-code, or diagrams if you like. The point is to work through how to design the logic you need to implement the above problem. Some example of pseudocode are here: <https://www.unf.edu/~broggio/cop2221/2221pseu.htm>

**Question 4 (25 points)**  
Write a Python program called **guess\_number()** that implements the logic you wrote in question 3. You will need to use the built-in ‘randint’ function of the random package in python. You can do this by including the ‘import’ statement shown below and generating the random number between 1 and 10 as shown below. Make sure all your print statements are invoked inside your function definition! Do not include any function calls in your final program, i.e., DO NOT write a line that look like--

**guess\_number()**

--the grader will add this later!

>>> import random  
>>> random.randint(1,10)  
4  
>>> random.randint(1,10)  
6  
>>> random.randint(1,10)  
2  
>>>

**Question 5 (10 points)**

Much like question 2, write out logic/pseudocode/diagrams for the following problem:

You want to **pass parameters to a function** in the form of a number of inches. The logic should then print the number of miles, yards, feet and/or inches equal to the value passed in. You should only print the *minimum* number of items; in other words, you should compute miles first, then yards, then feet, then inches. Here are some example invocations. Note that units that are zero are not printed out:

>>> convert\_distance(10)

You entered

10 inch

>>> convert\_distance(12)

You entered

1 feet

>>> convert\_distance(14)

You entered

1 feet

2 inch

>>> covert\_distance(49)

You entered

1 yard

1 feet

1 inch

>>> convert\_distance(63397)

You entered:

1 mile

1 yard

1 inch

You should write this with at least one function, if not more (always be thinking about how to abstract away your logic into functions/”black boxes”)

**Question 6 (30 points)**

Write a function called **convert\_distance()**. Implement your logic from question 5 in Python. Similar to Q4, all print statements should be invoked inside your function definition, but do not include any function calls in your final submission!

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NOTE: We have a corpus of common solutions to these problems (from google, stackoverflow, previous semesters, etc.). If your solution is too similar/the same as other solutions (i.e. if you cheat), you will get a zero for this assignment and be subject to potential sanction from SJA. Please don’t.