**Homework 1 - Data Science**

**The Objective of this Homework is to make you familiar with Python language, its code styles, popular functions, their uses and best practices of python because python has several readily available functions which can be used directly and the code will have more of a pythonic look and feel, so explore all the links or search it on google yourself to find the better code practices and conventions for python without writing it directly in C++ style code.**

**To Start in Python:**

**You need to run or interpret it somewhere right? So,**

**Complete Anaconda’s Installation | Jupyter Notebook | Spyder IDE:**

<https://www.youtube.com/watch?v=5mDYijMfSzs>

**For Jupyter Notebook Introduction: Tutorial**

https://www.dataquest.io/blog/jupyter-notebook-tutorial/

**For Python’s Best Practices (Must be Followed):**

<https://media.readthedocs.org/pdf/python-practice-book/latest/python-practice-book.pdf>

<https://github.com/andela/bestpractices/wiki/Python-Best-Practices>

<https://realpython.com/python-pep8/>

<https://docs.python-guide.org/writing/style/>

**Questions:**

1. **Use for loop, split(), and if to create a Statement that will print out words that start with 's':   
   For Example:**

**str = 'Print only the words that start with s in this sentence'**

***Output:***

***start***

***s***

***sentence***

1. **Use range() to print all the even numbers from 0 to 10.**
2. **Use List comprehension to create a list of all numbers between 1 and 50 that are divisible by 3.**
3. **Write a Python function that accepts a string and calculate the number of upper case letters and lower case letters.**

**Sample String : 'Hello Mr. Rogers, how are you this fine Tuesday?'**

**Expected Output :**

**No. of Upper case characters : 4**

**No. of Lower case Characters : 33**

1. **Write a program that prints the integers from 1 to 100. But for multiples of three print "Fizz" instead of the number, and for the multiples of five print "Buzz". For numbers which are multiples of both three and five print "FizzBuzz".**
2. **Use List Comprehension to create a list of the first letters of every word in the string below:**

**str = 'Create a list of the first letters of every word in this string'**

**Output:**

['C', 'a', 'l', 'o', 't', 'f', 'l', 'o', 'e', 'w', 'i', 't', 's']

1. **Reverse the string 'hello' using indexing:**
2. **Using keys and indexing, grab the 'hello' from the following dictionaries:**

* **d = {'simple\_key':'hello'}**
* **d = {'k1':{'k2':'hello'}}**
* **d = {'k1':[{'nest\_key':['this is deep',['hello']]}]}**

1. **Write a python Class that accepts a tuple, has two instance variables, setter and getter methods and also these methods to compute results accordingly**

**def Addition(tup )**

**def Subtraction (tup)**

**def Multiplication(tup)**

**def Division(tup )**

**def Power(tup)**

**Ask from user “Enter A if you want to do the addition, S for subtraction, M for multiplication, D for Division and P for power”. And print result accordingly. Please make this class in a separate py file and then import it into the driver program to use the functions of this class as a module.**

1. **Create a generator that generates the squares of numbers up to some number N.**

**def** gensquares(N):

**pass**

**for** x **in** gensquares(10):

**print** x

**Ouput | Jupyter Notebook:**

0 1 4 9 16 25 36 49 64 81