DS 610 Week 1 Assignment
Big Data Analytics

Due Date:

1.
Write a Python program to swap two variables with and without using the extra/third variable.
Input:
first_num = 10
second_num = 20

Output:
first_num = 20
second_num = 10

2.
List the basic data types in Python and classify them as mutable or/and ordered. Also, specify the corresponding class.
Example:

Data Type	Ordered	Mutable	Class
String	✅	❌	str

3.
Write a Python program to count the number of times the word 'because' occurs in a string. Consider the comparison as case-insensitive.
Input : 'You cannot end a sentence with because because because is a conjunction.'
count_because(input)
Output : 3

Input : 'You cannot end a sentence with Because because Because is a conjunction.'
count_because(input)
Output : 3

4.
Using filter() function, return the list of prime numbers given the input list of numbers.

5.
Use list comprehension to create a list of tuples of the first & last letters of every word in the string "Farmer jack realized that big yellow quilts were expensive".

6.
Let A and B be objects of class Foo. Which functions are called when print(A + B) is executed?
a) __add__(), __str__()
b) __str__(), __add__()
c) __sum__(), __str__()
d) __str__(), __sum__()

7.
Given an input string, write a Python program to print out words that start with second letter of English alphabet (case-insensitive) and also remove duplicates from the output.
Input:
'You cannot end a sentence with because Because because is a conjunction.'
Output:
because
Because

8.
You are given three sides of a triangle: a, b and c. Return True if they constitute a right-angled triangle.

9.
Given a list of integers, write a Python function which returns indices of the two numbers such that they add up to a specific target. Explain your logic/code.
Given nums = [2, 7, 11, 15], target = 9,
Because nums[0] + nums[1] = 2 + 7 = 9, return [0, 1].

10.
Without using min() and max() functions, given an array length 1 or more of ints, write a Python program to return the difference between the largest and smallest values in the array. Explain your logic/code.

big_diff([10, 3, 5, 6]) → 7
big_diff([7, 2, 10, 9]) → 8
big_diff([2, 10, 7, 2]) → 8

Thank you.