DS5010 Introduction to Programming for Data Science
In-class Assignment #2 (September 23)

Assignment:

Part - 1 (16 Points):

Indicate whether Lists, Tuples, Dictionaries, and Strings in Python are mutable or immutable. Just `print()` your sentences in this format: "1.<*question order*>) Python <*Lists/Tuples/Dictionaries/Strings*>, are <*mutable/immutable*>". Example outputs are given below.

Part - 2 (16 Points):

Indicate whether the following code pieces gives any error. Also indicate your reasoning behind your decision. Just print your sentences. Do not include these code pieces in your submission, but you can test these code pieces if you need, though you should be able to decide just by looking at them. You are only required to `print()` your answers in this format: "2.<*question order*>) <*Error/No error*>, because <*your reason*>". Example outputs are given below.

```
# 2.a)
my_obj1 = [1,2,3,4,5,6]
my_obj1[2] = 0
```

```
# 2.b)
my_obj2 = 'Dear Mr. Adams'
my_obj2[4] = 'a'
```

```
# 2.c)
my_obj3 = 'Logan Airport'
my_obj3[1:4] = 'xyz'
```

```
# 2.d)
my_obj4 = {'USA': 332, 'Germany': 83, 'Turkey': 83, 'Ethiopia': 117, 'Madagascar': 27}
del(my_obj4['Ethiopia'])
```

Part - 3 (65 points):

You are asked to collect squares of alternating consecutive integers, which you will create by prompting start and stop points, in a list. The stop point must be at least 10 more than the start point. You are also asked to find the sum of the numbers in that list, without using the built-in `sum()`.

For example, you enter start point as *1* and stop point as *13*. In this case, your range is *1,2,3,4,5,6,7,8,9,10,11,12,13.* You should create a list with the numbers *1, 9, 25, 49, 81, 121, 169* and then find the sum $1^2 + 3^2 + 5^2 + 7^2 + 9^2 + 11^2 + 13^2 = 455$. you enter start point as *1* and stop point as *13*. In this case, your range is *1,2,3,4,5,6,7,8,9,10,11,12.* You should create a list with the numbers *1, 9, 25, 49, 81, 121* and then find the sum $1^2 + 3^2 + 5^2 + 7^2 + 9^2 + 11^2 = 286$. Example outputs are given below.

Example Outputs

Example scenarios for part-2

```
# 2.a)
x = 0
y = 1/x
```

```
# 2.b)
a = 1
b = a + 3
```

Example complete outputs

```
Part - 1
1.a) Python Integers are immutable
1.b) Python Sets are mutable


Part - 2
2.a) Error, because you cannot divide a number by zero
2.b) No error, because both a and 3 are integers


Part - 3
Enter the start point: 1
Enter the end point: 5
End must be at least 10 more than the start. Enter the end point: 7
End must be at least 10 more than the start. Enter the end point: 10
End must be at least 10 more than the start. Enter the end point: 13
The squares of the alternating elements are [1, 9, 25, 49, 81, 121, 169]
The sum of the squares of alternating elements is 455
```

```
Part - 1
1.a) Python Integers are immutable
1.b) Python Sets are mutable


Part - 2
2.a) Error, because you cannot divide a number by zero
2.b) No error, because both a and 3 are integers


Part - 3
Enter the start point: 1
Enter the end point: 12
The squares of the alternating elements are [1, 9, 25, 49, 81, 121]
The sum of the squares of alternating elements is 286
```

Important Reminders:

* Do not forget to comment *(3 points)*
* Upload your .py file only to Canvas
* Use this naming: firstName_lastName_InClass02_DS5010_Fall2021.py