PROGRAMMING FOR ALL – SPRING 2021 - WEEK #4 – LAB – 210421

GENERAL LAB RULES:

1. **Every student has to join lab sessions.**
2. A goal of lab assignments is to practice topics covered in class during each week. Each lab has two parts: Theory & Programming.
3. In the theory part, you are expected to read pieces of codes and to predict outputs of these codes. You should not use Python for these predictions; you should test your skills to understand codes. When everyone is ready, TA displays correct outputs.
4. In the programming part, you are expected to make programs for assigned problems. You are expected to make all programs during the lab time, however, only one specified program should be submitted to CANVAS.
5. TA has to check your lab work for the full lab credit.

THIS WEEK TOPICS:

REPETITION STRUCTURE - `for` LOOP

PART I: THEORY – for this part take a piece of paper or open an empty file and write down expected outputs without using Python. AFTER this prediction verify your answer using Python or wait for TA to display the answer

#1

```
for value in range(-10,-2,2):
      print(value)
```

#2

```
for value in range(3,7):
      if value%2==0:
            print('AA')
      else:
            print('BB')
```

#3

```
sign='$$'
for num in [1,3,1,3,1]:
      print(sign*num)
```

#4

```
data=['1','2','3','4']
result=''
for element in data:
   result+=element*2
print(result)
```

#5

```
data=[15,4,10,15]
total=0
for number in data:
   total+=number
print(total)
```

#6

```
total=1
for number in range(1,10,3):
   total*=number
   print(total)
```

#7

```
for value in range(2,10,3):
   if value>=5:
      print('XX')
   else:
      print('YY')
```

PART II. PROGRAMMING

Note:

In all programs you can use only methods and tools already introduced in the class.

PROGRAMS #1: SUM OF SQUARES.

Write a program that asks a user to provide a positive integer n and then displays the sum of all squares of integers less or equal to n. See the example.

Example:

```
This program displays a sum of first n squares.
How many squares do you want in the sum? 8

1^2+2^2+3^2+...+8^2= 204
>>>
```

PROGRAM #2: EVEN and ODD DIGITS - must be submitted to CANVAS as lab4.py.

Start the program with: # your name.

Write a program that receives a positive integer from a user, and displays the number of even and odd digits in the entered integer.

Example:

```
This program displays info about the entered positive integer.
Enter a positive integer: 1125899
There are  2 even digits.
There are  5 odd digits.
>>>
```

PROGRAM #3: KG vs. LB

Pounds to **kg** conversion: 1 **pound** (**lb**) is equal to 0.45359237 **kilograms** (**kg**).

Write a program that converts weight from lb to kg or from kg to lb.

The program prompts the user to enter a number of conversions, and for each conversion offers a menu which conversion the user wants to make.

Example:

```
This is a weight convertor.
INFO: 1 pound (lb) is equal to 0.45359237 kilograms (kg).

How many conersions do you want to make? 3

Conversion # 1
*** If you want to convert kg to lb, enter 1.***
*** If you want to convert lb to kg, enter 2.***

Enter your choice: 1
Enter a weight in kilograms: 4.33
4.33 kg =  9.55 lb

Conversion # 2
*** If you want to convert kg to lb, enter 1.***
*** If you want to convert lb to kg, enter 2.***

Enter your choice: 2
Enter a weight in pounds: 173.4
173.4 lb =  78.65 kg

Conversion # 3
*** If you want to convert kg to lb, enter 1.***
*** If you want to convert lb to kg, enter 2.***

Enter your choice: 1
Enter a weight in kilograms: 70.5
70.5 kg =  155.43 lb
```