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2022 Nov 20
IT FDN 110 B AU 22
Assignment 06

Knowledge Document 06

Introduction

This week we were introduced to Functions and Classes. Also, how to use Docstring to make notes on what the Functions do.

Assignment LAB06-A

We modified Basic_math.py to work with attributes and return values.

```
#---#
# Title: SoC.py
# Desc: Script demonstrating Functions concept, based on Basic_MAth.py (Assignment02)
# DBiesinger 2030-Jan-01, Created File
# DBiesinger 2030-Jan-01, Modified to demonstrate SoC
# DBiesinger 2030-Jan-01, Modified to demonstrate Functions
#-----#
# LAB06_A.py
# Modify script to make it work w/ attributes and return values
# CWatt 2022-Nov-14
#--------------#

# -- PROCESSING -- #
# Process the data
def add(x, y):
    return x + y


# This function subtracts two numbers
def subtract(x, y):
    return x - y


# This function multiplies two numbers
def multiply(x, y):
    return x * y


# This function divides two numbers
def divide(x, y):
    return x / y


# -- PRESENTATION (Input/Output) -- #
# Get User input data
print('Basic Math script. Calculating the Sum, Difference, Product and Quotient of two numbers.')

num1 = float(input("Enter first number: "))
num2 = float(input("Enter second number: "))

print('\n\nThis script calculated using the numbers', num1, 'and', num2)
print('The Results are:\n')
print('Sum:\t\t', add(num1, num2))
print('Difference:\t', subtract(num1, num2))
print('Product:\t', multiply(num1, num2))
print('Quotient:\t', divide(num1, num2))
```

Figure 1-LAB06_A_script

```
Python 3.9.12 (main, Apr  5 2022, 01:53:17)
Type "copyright", "credits" or "license" for more information.

IPython 7.31.1 -- An enhanced Interactive Python.

In [1]: runfile('/Users/chriswatt/PYTHON_CLASS/Mod_06/LAB06_A.py')
Basic Math script. Calculating the Sum, Difference, Product and Quotient of two
numbers.
Enter first number: 5
Enter second number: 10


This script calculated using the numbers 5.0 and 10.0
The Results are:

Sum:      15.0
Difference:   -5.0
Product: 50.0
Quotient:     0.5

In [2]: |
```

Figure 2– LAB06_A_results

Assignment LAB06-B

We demonstrated in this exercise how to bundle 4 calculation functions into a single function.


```
1    #---#
2    # Title: SoC.py
3    # Desc: Script demonstrating Functions concept, based on Basuc_MAth.py (Assignment02)
4    # DBiesinger 2030-Jan-01, Created File
5    # DBiesinger 2030-Jan-01, Modified to demonstrate SoC
6    # DBiesinger 2030-Jan-01, Modified to demonstrate Functions
7    #-----#
8    # LAB06_A.py
9    # Modify script to make it work w/ attributes and return values
10   # CWatt 2022-Nov-14
11   #------------------------------------#
12   # Title: LAB06_B.py
13   #Desc: Modify script to demonstrate one function to calculate 4
14   # CWatt, 2022-Nov-18, Created File
15   #------------------------------------#
16
17
18   # -------- DATA --------#
19
20   dicResult = {'summ': None, 'diff': None, 'prod': None, 'quot': None}
21   lstTbl = [dicResult]
22
23   # -------- PROCESSING --------#
24   # Process the data
25
26   print('Basic Math script. Calculating the Sum, Difference, Product and Quotient of two numbers.')
27   val1 = float(input("Enter first number: "))
28   val2 = float(input("Enter second number: "))
29
30   def calc_dict_results(val1, val2, results):
31       results['summ'] = val1 + val2
32       results['diff'] = val1 - val2
33       results['prod'] = val1 * val2
34       results['quot'] = val1 / val2
35
36
37   # -------- PRESENTATION (INPUT/OUTPUT) or (I/O) --------#
38
39   print('\n\nThis script calculated using the numbers', val1, 'and', val2)
40   print('The Results are:\n')
41
42   calc_dict_results(val1, val2, dicResult)
43
44   for row in lstTbl:
45       for key, val in row.items():
46           print(key, ':', val)
```

Figure 3 – LAB06_B_script

```
Python 3.9.12 (main, Apr  5 2022, 01:53:17)
Type "copyright", "credits" or "license" for more information.

IPython 7.31.1 -- An enhanced Interactive Python.

In [1]: runfile('/Users/chriswatt/PYTHON_CLASS/Mod_06/LAB06_B.py')
Basic Math script. Calculating the Sum, Difference, Product and Quotient of two
numbers.
Enter first number: 5
Enter second number: 10


This script calculated using the numbers 5.0 and 10.0
The Results are:

summ : 15.0
diff : -5.0
prod : 50.0
quot : 0.5

In [2]:
```

Figure 4 – LAB06_B_results

Assignment LAB06_C

We modified the previous script to use Classes in order to calculate and output the same. I used a dictionary to store the data into lstTbl memory.

```python
1    #---#
2    # Title: SoC.py
3    # Desc: Script demonstrating Functions concept, based on Basuc_MAth.py (Assignment02)
4    # DBiesinger 2030-Jan-01, Created File
5    # DBiesinger 2030-Jan-01, Modified to demonstrate SoC
6    # DBiesinger 2030-Jan-01, Modified to demonstrate Functions
7    #-----#
8    # LAB06_A.py
9    # Modify script to make it work w/ attributes and return values
10   # CWatt 2022-Nov-14
11   #------------------------------------------#
12   # Title: LAB06_B.py
13   #Desc: Modify script to demonstrate one function to calculate 4
14   # CWatt, 2022-Nov-18, Created File
15   #------------------------------------------#
16   #------------------------------------------#
17   # Title: LAB06_C.py
18   #Desc: Modify script to demonstrate class that has 4 functions for doing calculations
19   # CWatt, 2022-Nov-18, Created File
20   #------------------------------------------#
21
22
23
24
25   # --------- DATA ---------#
26
27   val1 = float(input("Enter first number: "))
28   val2 = float(input("Enter second number: "))
29
30
31   # --------- PROCESSING ---------#
32
33   class SimpleMath():
34       """A collection of simple math processing functions"""
35
36       @staticmethod
37       def add_values(val1 = 0.0, val2 = 0.0):
38           return float(val1 + val2)
39
40       """Function for adding two values
41
42
43           Args:
44               val1: the first number to add
45               val2: the second number to add
46
```

Figure 4 – LAB06_C_script1

```
47
48              Returns:
49                  A float corresponding to the sum of val1 and val2
50                  """
51
52      @staticmethod
53      def diff_values(val1 = 0.0, val2 = 0.0):
54          return float(val1 - val2)
55
56      """Function for subtracting two values
57
58
59      Args:
60          val1: the number to subtract from
61          val2: the number to subtract
62
63
64          Returns:
65              A float corresponding to the difference of val1 and val2
66              """
67      @staticmethod
68      def prod_values(val1 = 0.0, val2 = 0.0):
69          return float(val1 * val2)
70
71      """Function for multiplying two values
72
73
74          Args:
75              val1: the first number to multiply
76              val2: the second number to...
77
78
79              Returns:
80                  A float corresponding to the product of val1 and val2
81                  """
82
83      @staticmethod
84      def quot_values(val1 = 0.0, val2 = 0.0):
85          return float(val1 / val2)
86
87      """Function for dividing two values
88
89
90          Args:
91              val1: the first number to divide
92              val2: the second number to...
93
```

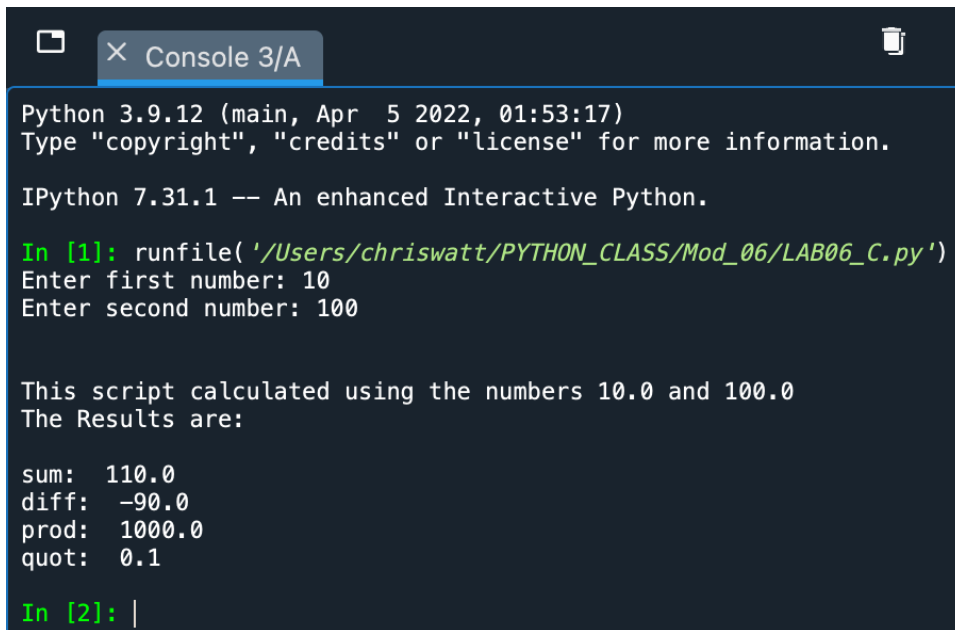Figure 5 – LAB06_C_script2

```
94
95                  Returns:
96                      A float corresponding to the quotient of val1 and val2
97                      """
98
99
100     # --------- PRESENTATION (INPUT/OUTPUT) or (I/O) ---------#
101     print('\n\nThis script calculated using the numbers', val1, 'and', val2)
102     print('The Results are:\n')
103
104     print('sum: ', SimpleMath.add_values(val1, val2))
105     print('diff: ',SimpleMath.diff_values(val1, val2))
106     print('prod: ',SimpleMath.prod_values(val1, val2))
107     print('quot: ',SimpleMath.quot_values(val1, val2))
```

Figure 6 – LAB06_C_script3

Figure 6 – LAB06_C_results

CDInventory.py

We were given code to modify and reorganize so that we can utilize functions and classes to make the script operate similarly. This assignment by far has been the most challenging in understanding new concepts to keep up with the momentum of the class.

```
======= The Current Inventory: =======
ID   CD Title (by: Artist)

1    Tom Petty (by:Great)
2    Sammy (by:HAgar)
===================================
Save this inventory to file? [y/n] y
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit

Which operation would you like to perform? [l, a, i, d, s or x]: a

Enter ID: 3
What is the CD's title? Forget
What is the Artist's name? Twin Shadow
======= The Current Inventory: =======
ID   CD Title (by: Artist)

1    Tom Petty (by:Great)
2    Sammy (by:HAgar)
3    Forget (by:Twin Shadow)
===================================
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit
```

Figure 7 – Spyder_results

```
Which operation would you like to perform? [l, a, i, d, s or x]: d

======= The Current Inventory: =======
ID      CD Title (by: Artist)

1       Tom Petty (by:Great)
2       Sammy (by:HAgar)
3       Forget (by:Twin Shadow)
4       Out come (by:Wolves)
=====================================
Which ID would you like to delete? 2
The CD was removed
======= The Current Inventory: =======
ID      CD Title (by: Artist)

1       Tom Petty (by:Great)
3       Forget (by:Twin Shadow)
4       Out come (by:Wolves)
=====================================
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit

Which operation would you like to perform? [l, a, i, d, s or x]: s

======= The Current Inventory: =======
ID      CD Title (by: Artist)

1       Tom Petty (by:Great)
3       Forget (by:Twin Shadow)
4       Out come (by:Wolves)
=====================================
Save this inventory to file? [y/n] y
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit

Which operation would you like to perform? [l, a, i, d, s or x]: x

(base) chriswatt@Chriss-MBP assignment06 %
```

Figure 8 – Terminal_results

https://github.com/CWattATX/CoffeeTable/Assignment_06