CTU training solutions CAREER SUCCESS STARTS AT CTU

Faculty of Information Technology								
	SUBJECT NAME: ANALYSING AND VISUALISING DATA WITH PYTHON **SUBJECT CODE: AVP632**							
I declare that I am familiar with, and will abide to the Examination rules of CTU	**Formative Assessment 2** **Duration**: **Date**: **Total Marks**: 100 **Total pages**: 5				**Examiner**: Mr. Isaac L **Moderator:** Mr. Francis A			
	Student number							
Signature	7	2	9	9				
	Surname: Van Straaten				**Initials**: R		/	%

AVP632_FA2

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Contents

Question 1

```python
#Question 1
import pandas as pd

#insert all the data in a list
data = {'month': ['Jan ','Feb ','Mar ','Apr ','May ','Jun '],
        'Jon commission': [7000,5500,6000,4500,8000,6000],
        'Maria commission': [10000,7500,6500,6000,9000,8500],
        'Olivia commission': [3000,6000,4500,4500,4000,5500]
        }
#convert the list to data frame
df = pd.DataFrame(data)
print(df)
```

```
   month  Jon commission  Maria commission  Olivia commission
0  Jan              7000             10000               3000
1  Feb              5500              7500               6000
2  Mar              6000              6500               4500
3  Apr              4500              6000               4500
4  May              8000              9000               4000
5  Jun              6000              8500               5500
```

Question 2

```
1  #Question 2
2  #Calculates the Avreage of each Column
3  AVG = df.mean(axis=0)
4  print (AVG)
```

```
Jon commission       6166.666667
Maria commission     7916.666667
Olivia commission    4583.333333
```

Question 3

3A

```python
#Question 3 A
import pandas as pd

#Dict Created with all the Values
Dict = {'Computer':1500,'Monitor':300,'Printer':150,'Desk':250}
print(Dict)

```

```
{'Computer': 1500, 'Monitor': 300, 'Printer': 150, 'Desk': 250}
```

3B

```python
#Question 3 B
#Convert the DICT to a dataframe
df = pd.DataFrame(list(Dict.items()),columns = ['Products','Prices'])

print (df)
```

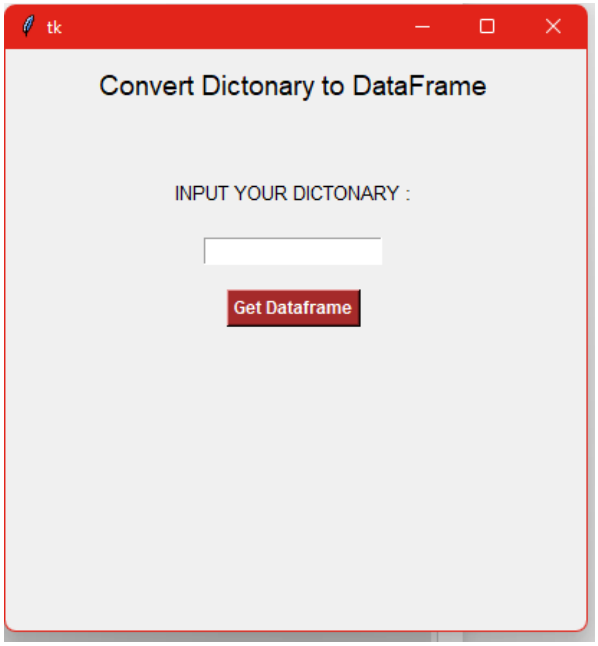
```
   Products  Prices
0  Computer    1500
1   Monitor     300
2   Printer     150
3      Desk     250
```

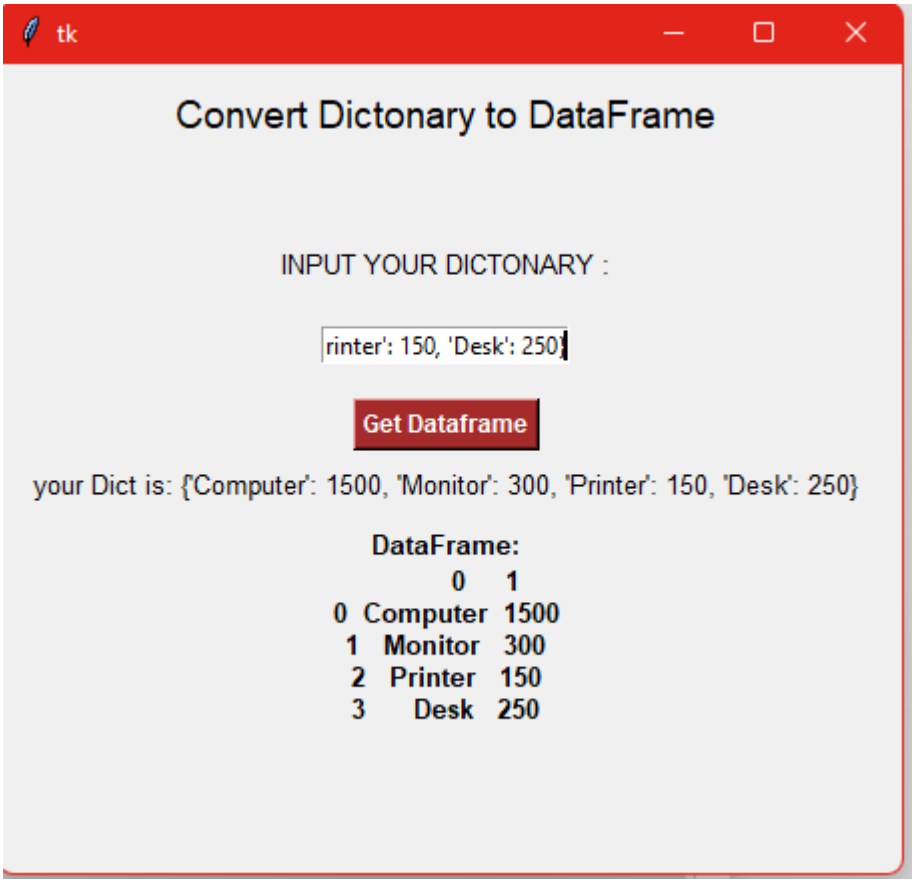
3C

Code

```python
#Question 3 C
import tkinter as tk
import ast
import pandas as pd

root= tk.Tk()

#Creates the blank canvas
canvas1 = tk.Canvas(root, width = 400, height = 400,  relief = 'raised')
canvas1.pack()

#Label 1 that displays the main heading
label1 = tk.Label(root, text='Convert Dictonary to DataFrame')
label1.config(font=('helvetica', 14))
canvas1.create_window(200, 25, window=label1)

#Label 2 that displays sub heading
label2 = tk.Label(root, text='INPUT YOUR DICTONARY :')
label2.config(font=('helvetica', 10))
canvas1.create_window(200, 100, window=label2)

entry1 = tk.Entry (root)
canvas1.create_window(200, 140, window=entry1)

#created function that does the conversion and displays it on the GUI
def getDataframe ():

    #Input = X1
    x1 = entry1.get()
    #Converts the String Input to a Dict using ast lib
    my_dict = ast.literal_eval(x1)
    # converts the dict to a dataframe using the pandas lib
    df = pd.DataFrame(list(my_dict.items()))

    #Label 3 to show the users original input
    label3 = tk.Label(root, text="your Dict is: " + x1,font=('helvetica', 10))
    canvas1.create_window(200, 210, window=label3)

    #Label4 displays where the dataframe is converted
    label4 = tk.Label(root, text= "DataFrame:",font=('helvetica', 10, 'bold'))
    canvas1.create_window(200, 240, window=label4)

    #Label 5 to show the converted user input dictonary to a dataframe
    #displays the dataframe on the GUI
    label5 = tk.Label(root, text= df,font=('helvetica', 10, 'bold'))
    canvas1.create_window(200, 290, window=label5)

#button the call the getDataframe function
button1 = tk.Button(text='Get Dataframe', command=getDataframe, bg='brown', fg='white', font=('helvetica', 9, 'bold'))
canvas1.create_window(200, 180, window=button1)

root.mainloop()
```

Output



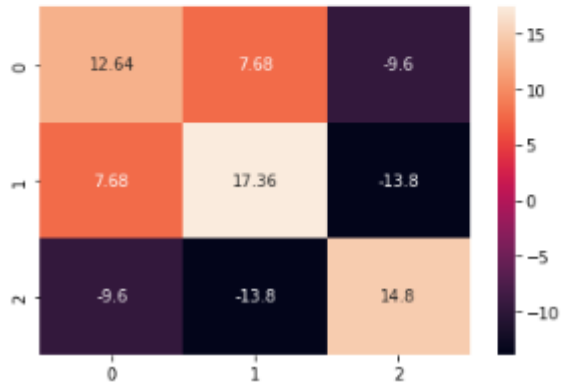


Data frame in the console

```
          0     1
0  Computer  1500
1   Monitor   300
2   Printer   150
3      Desk   250
```

Question 4

```python
#Question 4
import numpy as np
import seaborn as sn
import matplotlib.pyplot as plt

#inputs the data to plot the matrix visual
A = [45,37,42,35,39]
B = [38,31,26,28,33]
C = [10,15,17,21,12]

#convert to array
data = np.array([A,B,C])

#plot the visual
covMatrix = np.cov(data,bias=True)
sn.heatmap(covMatrix, annot=True, fmt='g')
plt.show()
```



Completed Declaration of Authenticity

I Ruan van straaten hereby (FULL NAME) declare that the contents of this assignment AVP632_FA2 is entirely my own work except for the following documents: (List the documents and page numbers of work in this portfolio that were generated in a group)

Activity	Date

Signature:  Date: 2022/08/29