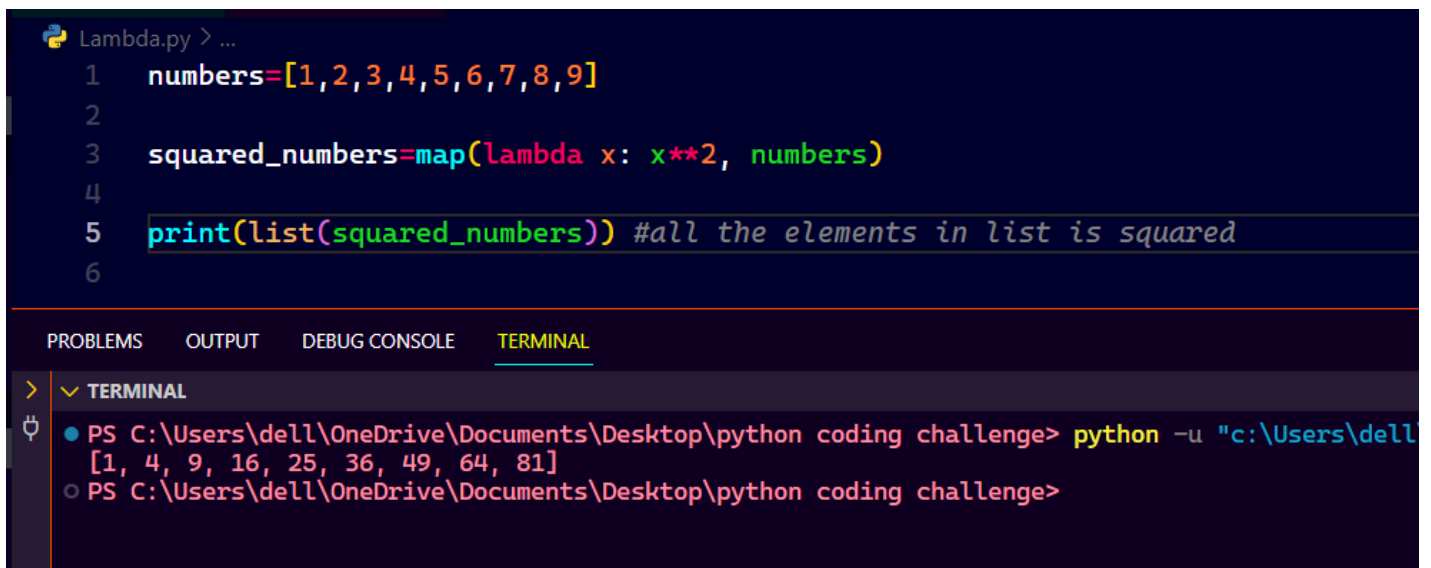


Python Coding Challenge

Pratik Wani

Question 2

- Execute with one example Lambda Functions in Python:
 - Lambda functions are also known as anonymous functions
 - Lambda functions don't have a name like regular functions defined with the def keyword
 - Here we just have to pass the parameters and then after ':' we have to give the statement we want to perform
 - We can also use the lambda functions with map, filter and reduce
 - In the following example I used the expression $x**2$ so the values are squared



```
Lambda.py > ...
1  numbers=[1,2,3,4,5,6,7,8,9]
2
3  squared_numbers=map(lambda x: x**2, numbers)
4
5  print(list(squared_numbers)) #all the elements in list is squared
6

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL
>  TERMINAL
• PS C:\Users\dell\OneDrive\Documents\Desktop\python coding challenge> python -u "c:\Users\dell\
[1, 4, 9, 16, 25, 36, 49, 64, 81]
○ PS C:\Users\dell\OneDrive\Documents\Desktop\python coding challenge>
```

- Read JSON Strings to Python Lists:
 - To read the json strings we can use the json module
 - There is function known as loads() which helps to convert the json string to python list
 - In the following example I make a nested json string with some personal details
 - And I converted it in the python list and then at end I printed the data of the python list

```
json_to_list.py > ...
1  import json
2
3  coding_challeng='''{
4  "name": "pratik wani",
5  "age": 21,
6  "city": "nashik",
7  "isStudent": "Yes",
8  "grades": [85, 92, 78],
9  "address": {
10     "street": "Ranapratap chaowk",
11     "zipcode": "422009",
12     "country": "India"
13 }
14 }'''
15
16 My_details=json.loads(coding_challeng)
17
18 print("Name: ",My_details['name'])
19 print("Age: ",My_details['age'])
20 print("City: ",My_details['city'])
21 print("Status: ",My_details['isStudent'])
22 print("Grades: ",My_details['grades'])
23 for i in My_details['address'].items():
24     print(i[0],": ",i[1])
25
26
```

✓ TERMINAL

```
● PS C:\Users\dell\OneDrive\Documents\Desktop\python coding challenge> p  
.py"  
Name: pratik wani  
Age: 21  
City: nashik  
Status: Yes  
Grades: [85, 92, 78]  
street : Ranapratap chaowk  
zipcode : 422009  
country : India  
○ PS C:\Users\dell\OneDrive\Documents\Desktop\python coding challenge>
```

Question 1

- Explain Pandas for Data Processing:
 - Pandas is open source python library which is very useful for the data processing and data analysis purposes
 - It provides different functions needed to manipulate and analyze structured data
 - Some uses of Pandas:
 - a) To create a series: one-dimensional labelled array
 - b) To create a dataframe: two-dimensional labelled array
 - c) Reading and Writing data: using read_csv and to_csv

```
Series_dataframe.py > ...
1  import pandas as pd
2
3  #creating series
4  series=pd.Series(['P','R','A','T','I','K'])
5  print("Pandas Series:\n",series)
6  print("\n*****\n")
7
8  #creating dataframe using pandas
9  header=['Name','Age','Salary']
10 data=[['Pratik',21,50000],['Vikas',23,100000],['Rushi',22,120000]]
11 df=pd.DataFrame(data,columns=header)
12 print(df)
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

> **✓ TERMINAL**

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rame.py"

Pandas Series:

	P
0	P
1	R
2	A
3	T
4	I
5	K

dtype: object

	Name	Age	Salary
0	Pratik	21	50000
1	Vikas	23	100000
2	Rushi	22	120000

PS C:\Users\dell\OneDrive\Documents\Desktop\python coding challenge>

- Reading CSV Data using Pandas
 - CSV data is Comma Separated Values
 - We can read the data which is stored in csv file using the pandas
 - Pandas library provide function 'read_csv' to read the CSV data
 - Here in following example I have created the csv file names as codingchallenge.csv
 - Using read_csv I extracted the data from codingchallenge.csv
- codingchallenge.csv:

```
codingchallenge.csv
1  Name,Employee ID,Age,Salary
2  Aarav,1001,28,60000
3  Aditi,1002,35,75000
4  Amit,1003,30,80000
5  Ananya,1004,25,55000
6  Arjun,1005,32,70000
7  Bhavya,1006,40,90000
8  Chitra,1007,22,50000
9  Deepak,1008,33,72000
10 Divya,1009,28,65000
11 Gaurav,1010,38,85000
12
```

Read_CSV.py > ...

```
1  import pandas as pd
2
3  #reading file using pandas
4  cc_data= pd.read_csv("codingchallenge.csv")
5  print(cc_data, '\n')
6
7
8  #extracting the columns
9  print(cc_data.columns, '\n')
10
11
12 #extracting specific column
13 print(cc_data.Name, '\n')
14
```

TERMINAL

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	Name	Employee ID	Age	Salary
0	Aarav	1001	28	60000
1	Aditi	1002	35	75000
2	Amit	1003	30	80000
3	Ananya	1004	25	55000
4	Arjun	1005	32	70000
5	Bhavya	1006	40	90000
6	Chitra	1007	22	50000
7	Deepak	1008	33	72000
8	Divya	1009	28	65000
9	Gaurav	1010	38	85000

Index(['Name', 'Employee ID', 'Age', 'Salary'], dtype='object')

0 Aarav
1 Aditi
2 Amit
3 Ananya
4 Arjun
5 Bhavya
6 Chitra
7 Deepak
8 Divya
9 Gaurav

Name: Name, dtype: object

○ PS C:\Users\dell\OneDrive\Documents\Desktop\python coding challenge>

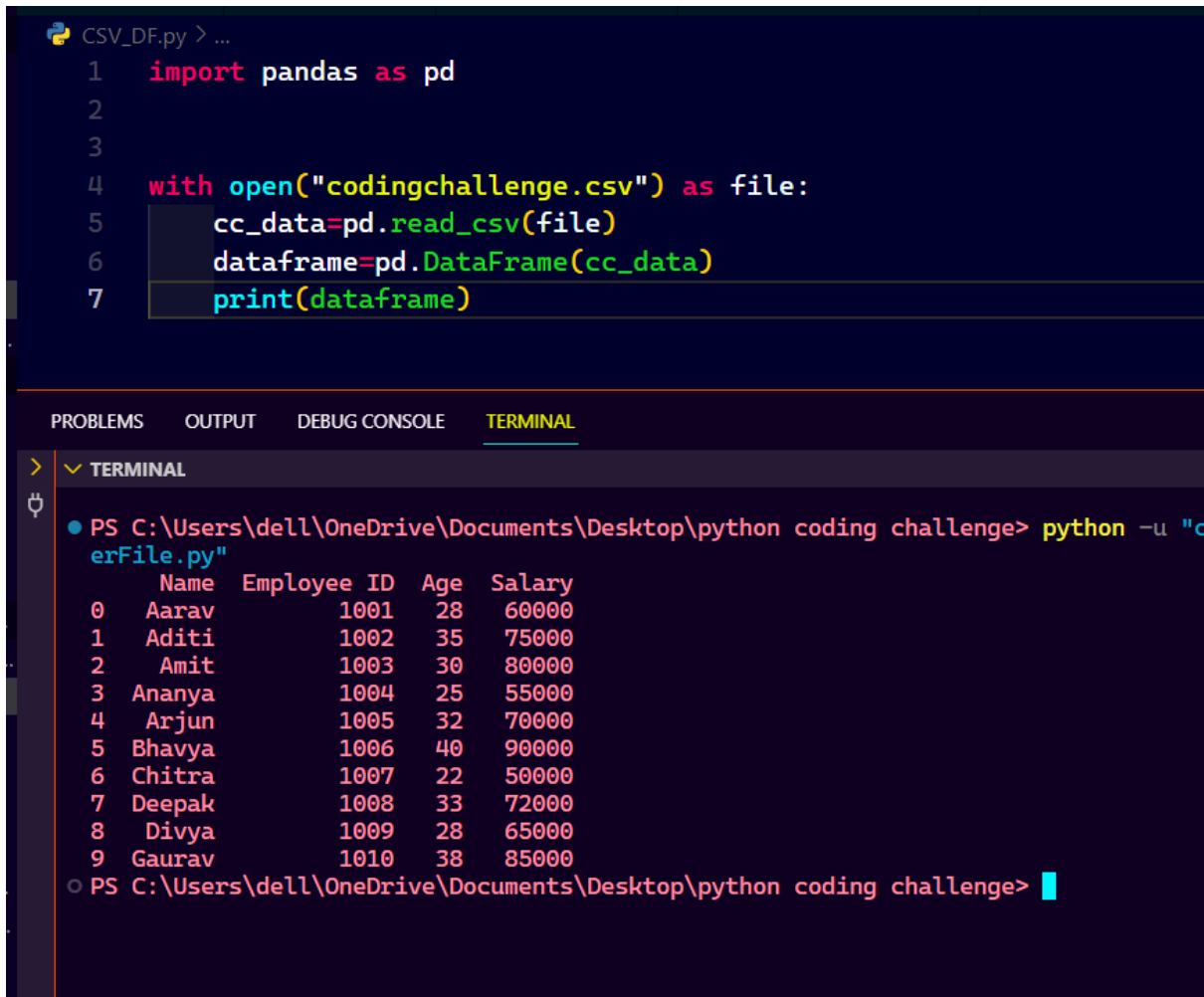
- Filter Data in Pandas Dataframe using query
 - In pandas we can filter the CSV data while extracting the data from CSV file
 - To filter a data we have to use a method name as query in pandas library
 - We just need to pass the condition in query function
 - We can apply these function on dataframe
 - In the following example I extracted the data from codingchallenge.csv file and stored it in dataframe
 - Then I applied the query function on dataframe to get the filtered data basis on different conditions

```
Filter_query.py > ...
1  import pandas as pd
2
3  #first create dataframe
4  cc_data=pd.read_csv("codingchallenge.csv")
5  store=pd.DataFrame(cc_data)
6
7  #then we will use query method to apply different filters
8  filter_store1=store.query("Salary > 70000")
9  print(filter_store1,'\n')
10
11 filter_store2=store.query("Age == 33 or Age == 35")
12 print(filter_store2)
```

```
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● PS C:\Users\de11\OneDrive\Documents\Desktop\python coding challenge>
.py"
    Name  Employee ID  Age  Salary
1  Aditi         1002   35   75000
2   Amit         1003   30   80000
5 Bhavya         1006   40   90000
7 Deepak         1008   33   72000
9 Gaurav         1010   38   85000

    Name  Employee ID  Age  Salary
1  Aditi         1002   35   75000
7 Deepak         1008   33   72000
```

- Read Data from CSV Files to Pandas Dataframes
 - We can also read the csv data using pandas and can convert that data into the dataframes
 - For these first we need to extract the data using read_csv and then we will convert the data in python dataframes
 - Here I used the same csv file codingchallenge.csv



The screenshot shows a code editor with a Python script named `CSV_DF.py` and its terminal output. The script reads a CSV file named `codingchallenge.csv` and prints the resulting DataFrame. The terminal output shows the command being executed and the resulting DataFrame with columns: Name, Employee ID, Age, and Salary.

```
CSV_DF.py > ...
1  import pandas as pd
2
3
4  with open("codingchallenge.csv") as file:
5      cc_data=pd.read_csv(file)
6      dataframe=pd.DataFrame(cc_data)
7      print(dataframe)
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

> **TERMINAL**

```
PS C:\Users\dell\OneDrive\Documents\Desktop\python coding challenge> python -u "c
erFile.py"
   Name  Employee ID  Age  Salary
0  Aarav         1001   28   60000
1  Aditi         1002   35   75000
2   Amit         1003   30   80000
3  Ananya        1004   25   55000
4  Arjun         1005   32   70000
5  Bhavya        1006   40   90000
6  Chitra        1007   22   50000
7  Deepak        1008   33   72000
8  Divya         1009   28   65000
9  Gaurav        1010   38   85000
PS C:\Users\dell\OneDrive\Documents\Desktop\python coding challenge>
```