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Topics : Python Coding Challenge Q2

Batch : Data Engineering Batch-1

Q. Execute with one example Lambda Functions in Python & Read JSON Strings to Python dicts or lists.

Lambda Function :

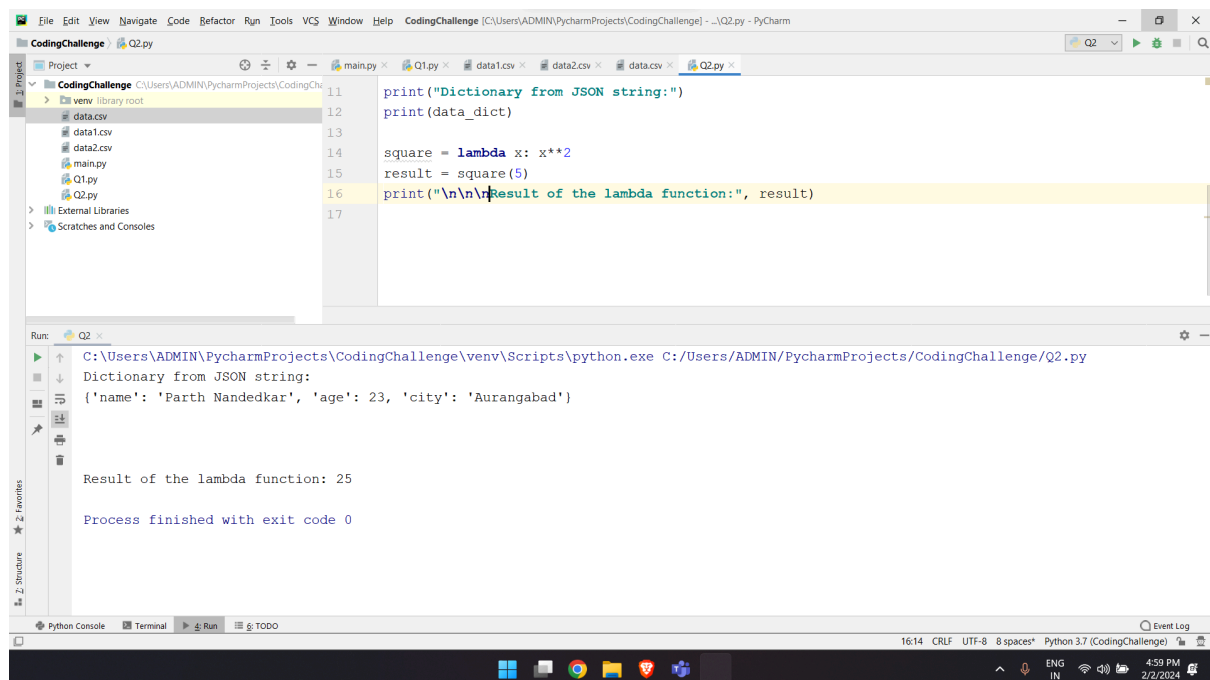
A lambda function is a small anonymous function defined using the lambda keyword. It's a quick way to create a simple function without formally defining it using the def keyword.

Syntax : lambda arguments : return_expression

Example,

```
square = lambda x: x**2
```

If we call above lambda function as square(num),
It will return the square of the given 'num' value.



The screenshot shows a PyCharm IDE window titled 'CodingChallenge'. The main editor displays a Python script in a file named 'Q2.py'. The script contains the following code:

```
11 print("Dictionary from JSON string:")
12 print(data_dict)
13
14 square = lambda x: x**2
15 result = square(5)
16 print("\n\nResult of the lambda function:", result)
17
```

The left sidebar shows the project structure with files like 'data.csv', 'data1.csv', 'data2.csv', 'main.py', 'Q1.py', and 'Q2.py'. Below the editor, the 'Run' console shows the output of the script:

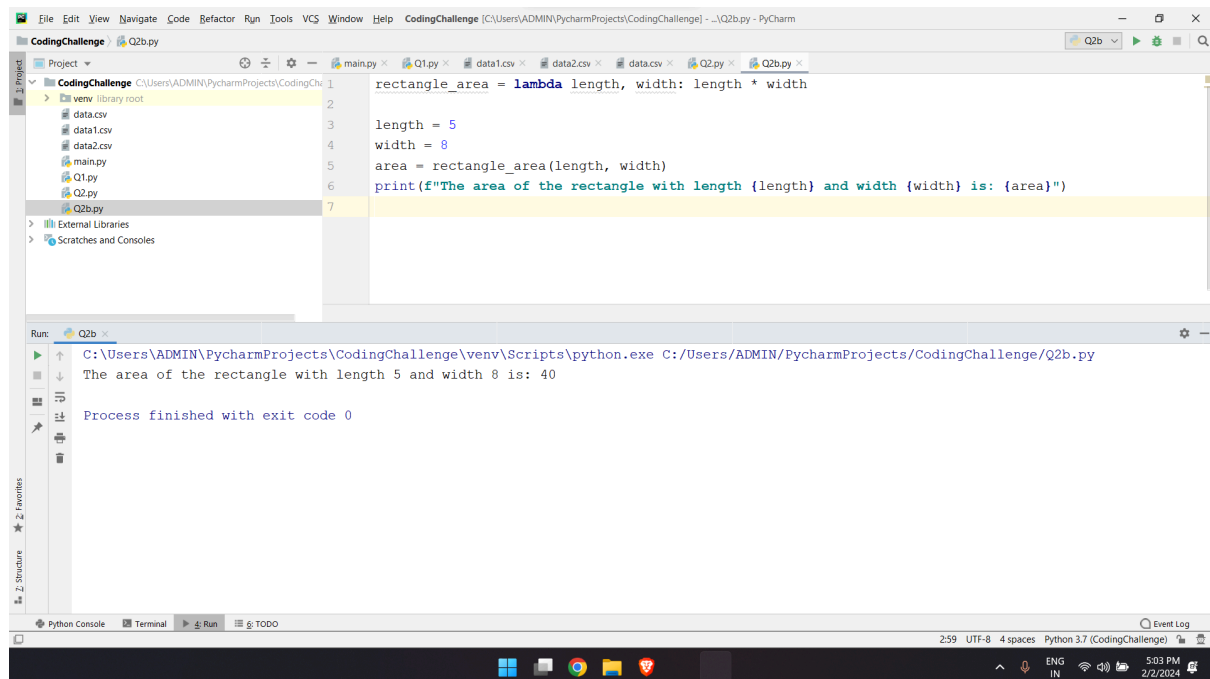
```
Run: Q2
C:\Users\ADMIN\PycharmProjects\CodingChallenge\venv\Scripts\python.exe C:/Users/ADMIN/PycharmProjects/CodingChallenge/Q2.py
Dictionary from JSON string:
{'name': 'Parth Nandedkar', 'age': 23, 'city': 'Aurangabad'}

Result of the lambda function: 25

Process finished with exit code 0
```

The bottom status bar indicates the file encoding is UTF-8, the editor width is 8 spaces, and the Python version is 3.7.

Example of rectangle area of lambda function :



The screenshot shows the PyCharm IDE interface. The main editor window displays a Python script in `Q2b.py` with the following code:

```
1 rectangle_area = lambda length, width: length * width
2
3 length = 5
4 width = 8
5 area = rectangle_area(length, width)
6 print(f"The area of the rectangle with length {length} and width {width} is: {area}")
7
```

The left sidebar shows the project structure for `CodingChallenge`, including a `venv` directory and several `data.csv` files. The bottom panel shows the Run output for `Q2b.py`:

```
Run: Q2b.py
C:\Users\ADMIN\PycharmProjects\CodingChallenge\venv\Scripts\python.exe C:/Users/ADMIN/PycharmProjects/CodingChallenge/Q2b.py
The area of the rectangle with length 5 and width 8 is: 40
Process finished with exit code 0
```

The status bar at the bottom indicates the file encoding is UTF-8, 4 spaces indentation, Python 3.7, and the date is 2/2/2024.

`lambda length, width: length * width`: Defines a lambda function that takes two parameters, length and width, and returns their product.

`rectangle_area = lambda length, width: length * width`: Assigns the lambda function to the variable `rectangle_area`.

`area = rectangle_area(length, width)`: Calls the lambda function with the given length and width.

`print(f"The area of the rectangle with length {length} and width {width} is: {area}")`: Prints the calculated area.

In this example, the lambda function calculates the area of a rectangle given its length and width.

JSON String :

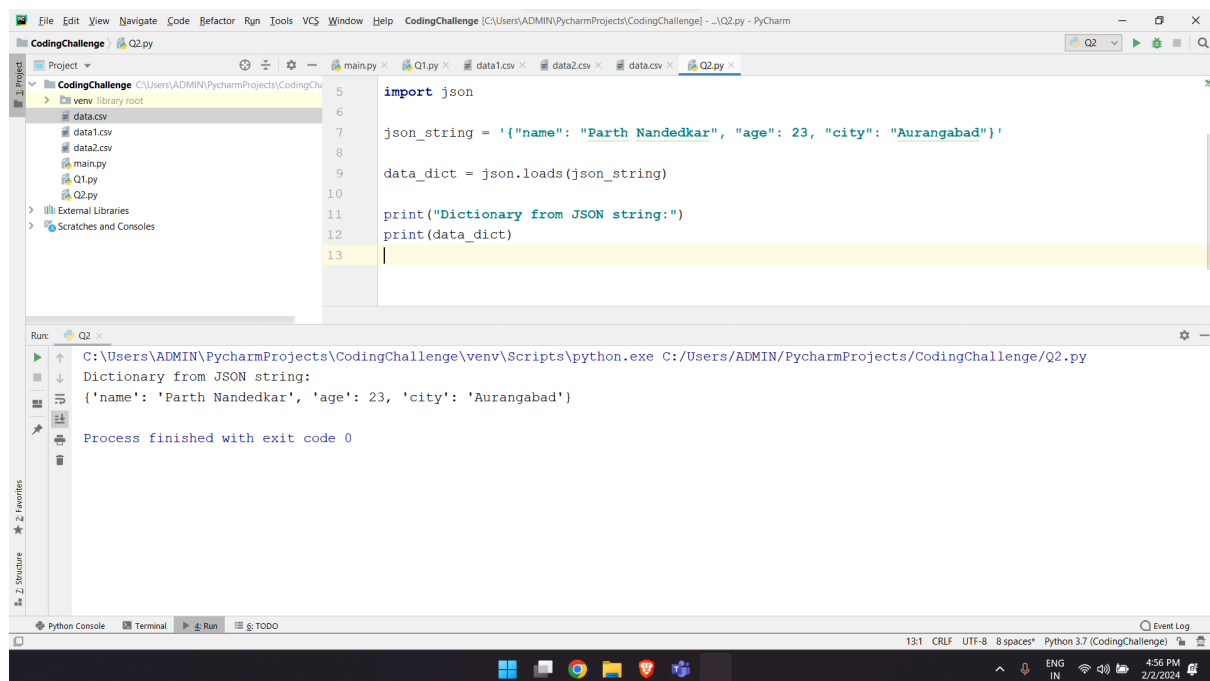
It is JavaScript Object Notation , this type of file is used in web based applications to store data . The data is stored in key value pairs it is in '{}' Curly braces.

For example,

```
{  
'Name' : 'Parth,'  
'Age' : 23,  
'City' : 'Aurangabad'  
}
```

So these types of strings are called JSON strings.

I have implemented the program to get Dictionary object from JSON string :



```
import json  
  
json_string = '{"name": "Parth Nandedkar", "age": 23, "city": "Aurangabad"}'  
  
data_dict = json.loads(json_string)  
  
print("Dictionary from JSON string:")  
print(data_dict)
```

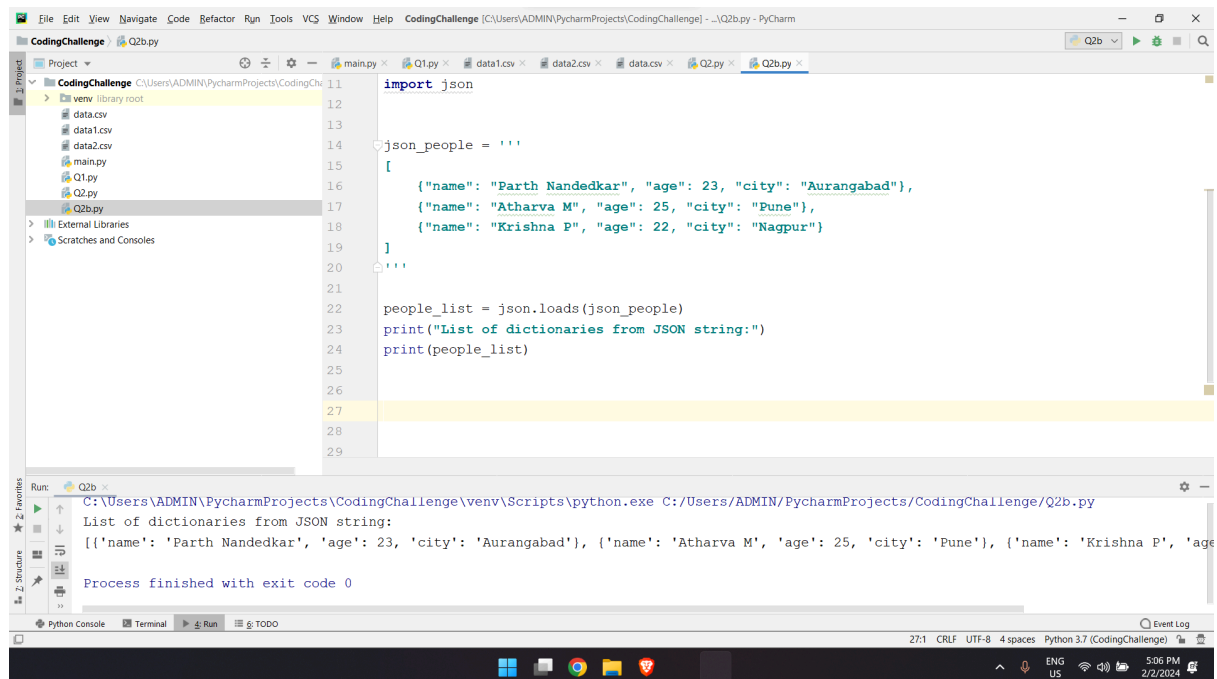
Run: Q2

```
C:\Users\ADMIN\PycharmProjects\CodingChallenge\venv\Scripts\python.exe C:/Users/ADMIN/PycharmProjects/CodingChallenge/Q2.py  
Dictionary from JSON string:  
{'name': 'Parth Nandedkar', 'age': 23, 'city': 'Aurangabad'}  
Process finished with exit code 0
```

Python Console | Terminal | Run | TODO

13:1 CRLF UTF-8 8 spaces Python 3.7 (CodingChallenge) 4:56 PM 2/2/2024

Example of another JSON Strings to python Dictionary :



The screenshot shows the PyCharm IDE interface. The main editor window displays a Python script named `Q2b.py`. The script imports the `json` module and defines a JSON string `json_people` containing a list of three people. It then uses `json.loads()` to parse the string into a Python list of dictionaries, `people_list`, and prints it with a descriptive message.

```
import json

json_people = '''
[
    {"name": "Parth Nandedkar", "age": 23, "city": "Aurangabad"},
    {"name": "Atharva M", "age": 25, "city": "Pune"},
    {"name": "Krishna P", "age": 22, "city": "Nagpur"}
]
'''

people_list = json.loads(json_people)
print("List of dictionaries from JSON string:")
print(people_list)
```

The Run window at the bottom shows the output of the script: "List of dictionaries from JSON string:" followed by the printed list of dictionaries. The process finished with exit code 0.

`json_people`: Defines a JSON string representing a list of people.

`json.loads(json_people)`: Uses the `json.loads` function to parse the JSON string into a Python list of dictionaries (`people_list`).

`print("List of dictionaries from JSON string:")`: Prints the resulting list of dictionaries.

In this example, `json.loads` is used to convert a JSON string into a Python list of dictionaries representing people.