



COGNIZANCE TASK – 8

[PYTHON - MEDICORE LVL]

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Question-1

The image shows the Spyder Python IDE interface. The left pane displays a Python script named `Q1.py` with the following code:

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Wed Mar  9 16:30:04 2022
4
5  @author: SHABARIRAJAN KJ
6  """
7  import numpy as np
8  l = int(input("Enter the first number:"))
9  o = int(input("Enter the first number:"))
10 v = o + 1
11 nums = np.arange(l,v)
12 print("Original array:")
13 print(nums)
14 e = 5
15 new_nums = np.zeros(len(nums) + (len(nums)-1)*(e))
16 new_nums[:e+1] = nums
17 print("\nNew array:")
18 print(new_nums)
19
```

The right pane shows the IPython console output for the script:

```
Python 3.7.9 (tags/v3.7.9:13c94747c7, Aug 17 2020, 18:58:18) [MSC v.1900 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.

IPython 7.31.1 -- An enhanced Interactive Python.

In [1]: runfile('C:/Users/SHABARIRAJAN KJ/.spyder-py3/Q1.py', wdir='C:/Users/SHABARIRAJAN KJ/.spyder-
py3')

Enter the first number:10

Enter the first number:14
Original array:
[10 11 12 13 14]

New array:
[10.  0.  0.  0.  0.  0. 11.  0.  0.  0.  0.  0. 12.  0.  0.  0.  0.  0.
 13.  0.  0.  0.  0.  0. 14.]

In [2]:
```

The status bar at the bottom indicates: LSP Python: ready | custom (Python 3.7.9) | Line 19, Col 1 | UTF-8 | CRLF | RW | Mem 59%

Question-2

The image shows the Spyder Python IDE interface. The left pane displays a Python script named `Q2.py` with the following code:

```
1  #-*- coding: utf-8 -*-
2  """
3  Created on Wed Mar  9 16:43:01 2022
4
5  @author: SHABARIRAJAN KJ
6  """
7  import numpy as np
8  print()
9  print("Enter the number of elements in array 1:")
10 v = int(input())
11 print()
12 print("Enter the inputs for array 1:")
13 arr1 = input()
14 i = list(map(int,arr1.split(' ')))
15 print()
16 print("First array:")
17 print()
18 print(i)
19 print()
20 print("Enter the number of elements in array 2:")
21 f = int(input())
22 print()
23 print("Enter the inputs for array 2:")
24 arr2 = input()
25 e = list(map(int,arr2.split(' ')))
26 print()
27 print("Second array:")
28 print()
29 print(e)
30 print()
31 t = np.allclose(i, e)
32 print(t)
33
```

The right pane shows the IPython console output for the script execution:

```
In [18]: runfile('C:/Users/SHABARIRAJAN KJ/.spyder-py3/Q2.py', wdir='C:/Users/SHABARIRAJAN KJ/.spyder-py3')

Enter the number of elements in array 1:
6

Enter the inputs for array 1:
1 0 0 0 1 0

First array:
[1, 0, 0, 0, 1, 0]

Enter the number of elements in array 2:
6

Enter the inputs for array 2:
0 0 1 1 0 1

Second array:
[0, 0, 1, 1, 0, 1]

False

In [19]: |
```

The status bar at the bottom indicates: LSP Python: ready, custom (Python 3.7.9), Line 7, Col 19, UTF-8, CRLF, RW, Mem 62%.

Question-3

What is the result of the following expression ?

```
print(0 * np.nan)
print(np.nan != np.nan)
print(np.inf > np.nan)
print(np.nan - np.nan)
print(0.3 == 3 * 0.1)
```

Ans: nan
True
False
nan
False

Question-4

The image shows the Spyder Python IDE interface. The main editor window displays a Python script named `Q4.py` located at `C:\Users\SHABARIRAJAN KJ\.spyder-py3\Q4.py`. The script contains a docstring with metadata and a loop that constructs a string from a pandas Series.

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Wed Mar  9 16:49:41 2022
4
5  @author: SHABARIRAJAN KJ
6  """
7
8  import pandas as pd
9  ser = pd.Series(['amrita', 'school', 'of', 'engineering', 'chennai', 'campus'])
10 y = ""
11 o = ser.str.title()
12 v = 0
13 while v < len(ser):
14     y = y + o[v]
15     y = y + " "
16     v = v + 1
17 print(y)
```

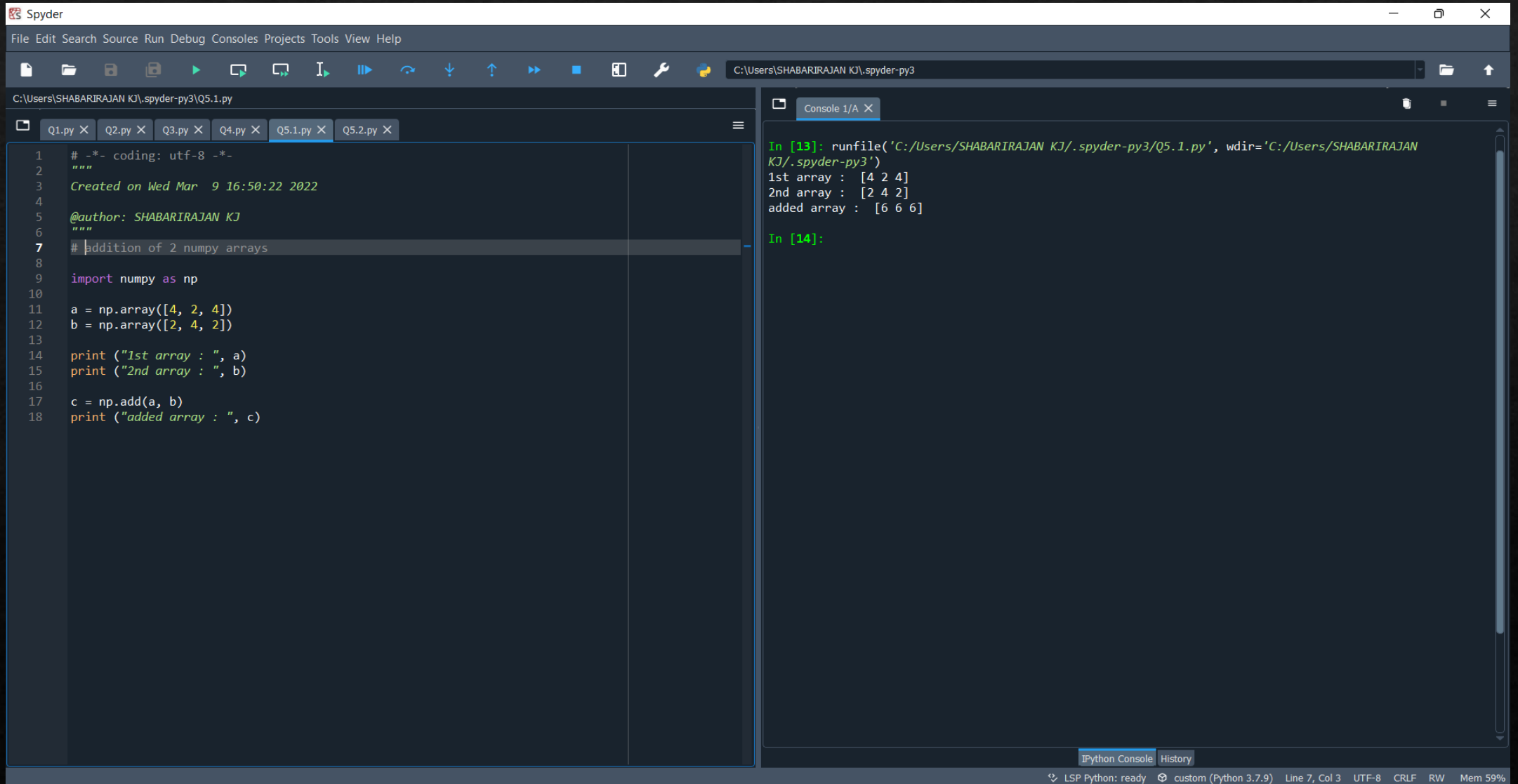
The IPython Console on the right shows the execution of the script using `runfile`. The output of the script is displayed below the prompt:

```
In [7]: runfile('C:/Users/SHABARIRAJAN KJ/.spyder-py3/Q4.py', wdir='C:/Users/SHABARIRAJAN KJ/.spyder-py3')
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In [8]:
```

The status bar at the bottom indicates the interpreter is 'LSP Python: ready', the environment is 'custom (Python 3.7.9)', and the memory usage is 'Mem 59%'.

Question-5.1



The image shows the Spyder Python IDE interface. The main editor window displays a Python script for adding two NumPy arrays. The script includes a docstring with metadata and a comment describing the purpose of the code. The code imports NumPy, creates two arrays 'a' and 'b', and then adds them together using 'np.add', printing the results at each step.

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Wed Mar  9 16:50:22 2022
4
5  @author: SHABARIRAJAN KJ
6  """
7  # addition of 2 numpy arrays
8
9  import numpy as np
10
11  a = np.array([4, 2, 4])
12  b = np.array([2, 4, 2])
13
14  print ("1st array : ", a)
15  print ("2nd array : ", b)
16
17  c = np.add(a, b)
18  print ("added array : ", c)
```

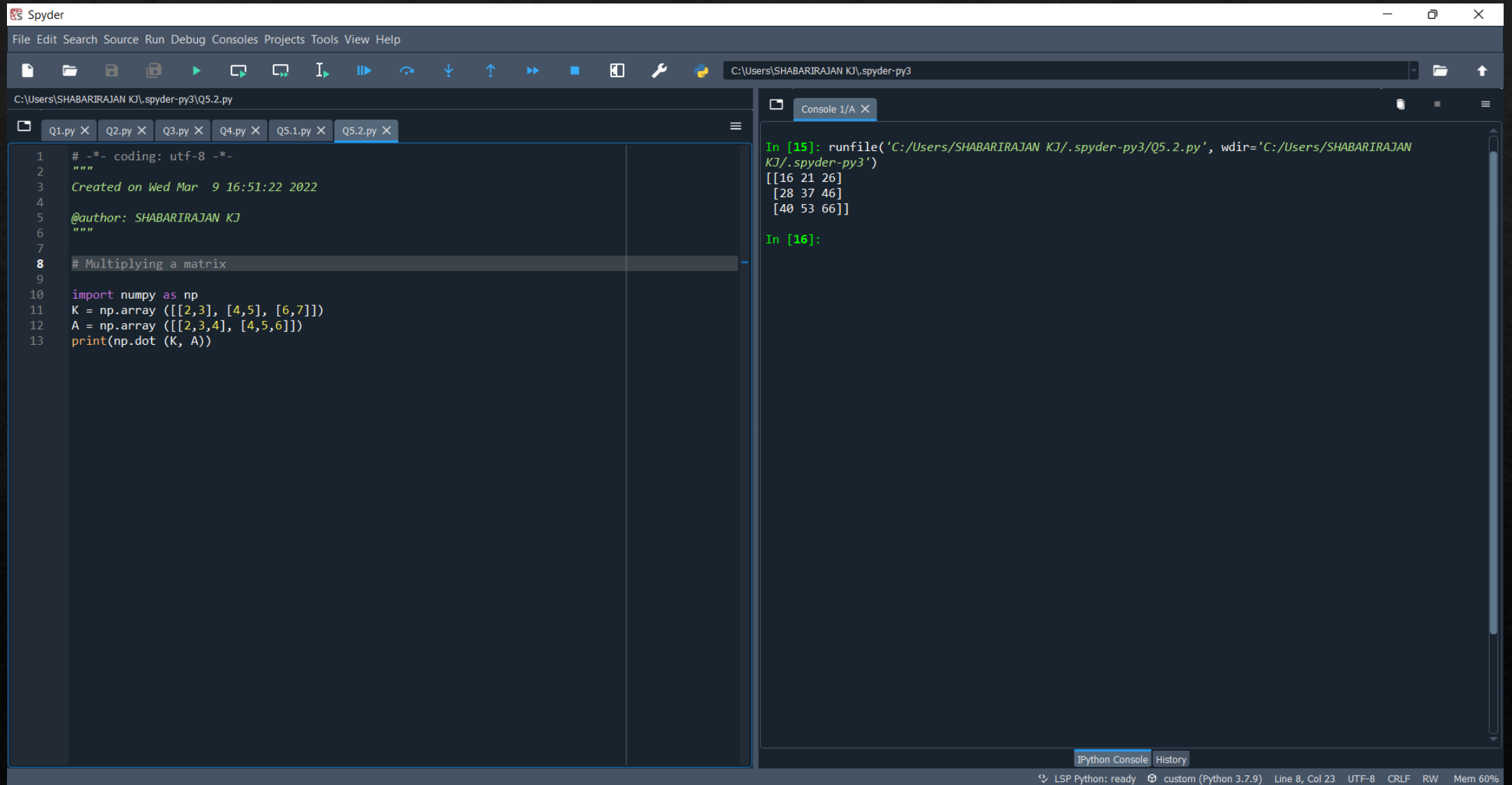
The IPython Console on the right shows the output of the script execution. It displays the file path, the arrays 'a' and 'b', and the resulting array 'c'.

```
In [13]: runfile('C:/Users/SHABARIRAJAN KJ/.spyder-py3/Q5.1.py', wdir='C:/Users/SHABARIRAJAN KJ/.spyder-py3')
1st array : [4 2 4]
2nd array : [2 4 2]
added array : [6 6 6]

In [14]:
```

The status bar at the bottom indicates the LSP Python is ready, the custom interpreter is Python 3.7.9, and the current position is Line 7, Col 3.

Question-5.2



The image shows the Spyder Python IDE interface. The main editor window displays a file named `Q5.2.py` with the following code:

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Wed Mar  9 16:51:22 2022
4
5  @author: SHABARIRAJAN KJ
6  """
7
8  # Multiplying a matrix
9
10 import numpy as np
11 K = np.array ([[2,3], [4,5], [6,7]])
12 A = np.array ([[2,3,4], [4,5,6]])
13 print(np.dot (K, A))
```

The console window on the right shows the output of the code execution:

```
In [15]: runfile('C:/Users/SHABARIRAJAN KJ/.spyder-py3/Q5.2.py', wdir='C:/Users/SHABARIRAJAN KJ/.spyder-py3')
[[16 21 26]
 [28 37 46]
 [40 53 66]]

In [16]:
```

The status bar at the bottom indicates the following information:

- LSP Python: ready
- custom (Python 3.7.9)
- Line 8, Col 23
- UTF-8
- CRLF
- RW
- Mem 60%