Assignement-1-Numpy

Que-1-

1 a. Create the following array:
array([[0.01, 0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.08, 0.09, 0.1],
[0.11, 0.12, 0.13, 0.14, 0.15, 0.16, 0.17, 0.18, 0.19, 0.2],
[0.21, 0.22, 0.23, 0.24, 0.25, 0.26, 0.27, 0.28, 0.29, 0.3],
[0.31, 0.32, 0.33, 0.34, 0.35, 0.36, 0.37, 0.38, 0.39, 0.4],
[0.41, 0.42, 0.43, 0.44, 0.45, 0.46, 0.47, 0.48, 0.49, 0.5],
[0.51, 0.52, 0.53, 0.54, 0.55, 0.56, 0.57, 0.58, 0.59, 0.6],
[0.61, 0.62, 0.63, 0.64, 0.65, 0.66, 0.67, 0.68, 0.69, 0.7],
[0.71, 0.72, 0.73, 0.74, 0.75, 0.76, 0.77, 0.78, 0.79, 0.8],
[0.81, 0.82, 0.83, 0.84, 0.85, 0.86, 0.87, 0.88, 0.89, 0.9],
[0.91, 0.92, 0.93, 0.94, 0.95, 0.96, 0.97, 0.98, 0.99, 1.]])

Ans:-

```
np.arange(0.01,1.01,0.01).reshape(10,10)
```

Que-2-

1 b. Create an array of 20 linearly spaced points between 0 and 1

Ans:-

```
x=np.linspace(start=0,stop=1,num=20)

x

array([0.        , 0.05263158, 0.10526316, 0.15789474, 0.21052632,
       0.26315789, 0.31578947, 0.36842105, 0.42105263, 0.47368421,
       0.52631579, 0.57894737, 0.63157895, 0.68421053, 0.73684211,
       0.78947368, 0.84210526, 0.89473684, 0.94736842, 1.        ])
```

Que:-3

 # RUN THIS CELL – Use this as a Starting Matrix from 1.c to 1.g
mat = np.arange(1,26).reshape(5,5)
mat
array([[1, 2, 3, 4, 5],
[6, 7, 8, 9, 10],
[11, 12, 13, 14, 15],
[16, 17, 18, 19, 20],
[21, 22, 23, 24, 25]]

Ans:-

```
mat[2:5,1:5]
```

Que:-4

1d. Write code that reproduces the output shown below:
20

Ans:-

```
mat[3,4]
```

Que:-5

1e. Write code that reproduces the output shown below:
array([[2],
[7],
[12]])

Ans:-

```
mat[:3,1:2]
```

Que:-6

1f. Write code that reproduces the output shown below:
array([21, 22, 23, 24, 25])

Ans:-

```
mat[4]
```

Que:-7

1g. Write code that reproduces the output shown below:
array([[16, 17, 18, 19, 20],
[21, 22, 23, 24, 25]])

Ans:-

```
mat[3:]
```

Que:-8

2. Following is the 2-D array. Print max from axis 0 and min from axis 1:
import numpy
sampleArray = numpy.array([[34,43,73],[82,22,12],[53,94,66]])

Ans:-

```
import numpy

print("Printing Original array")
sampleArray = numpy.array([[34,43,73],[82,22,12],[53,94,66]])
print (sampleArray)


minOfAxisOne = numpy.amin(sampleArray, 1)
print("Printing amin Of Axis 1")
print(minOfAxisOne)

maxOfAxisOne = numpy.amax(sampleArray, 0)
print("Printing amax Of Axis 0")
print(maxOfAxisOne)
```

Output:-

```
Printing Original array
[[34 43 73]
 [82 22 12]
 [53 94 66]]
Printing amin Of Axis 1
[34 12 53]
Printing amax Of Axis 0
[82 94 73]
```

Que:-9

3. Create an 8X3 integer array from a range between 10 to 34 such that the difference between each element is 1 and then Split the array into four equal-sized sub-arrays.

Ans:-

```
import numpy

# Create 8x3 Array

print("Creating 8X3 array using numpy.arange")

 sampleArray = numpy.arange(10, 34, 1)

sampleArray = sampleArray.reshape(8,3)

# Display the Array

print (sampleArray)

# Divide the into 4 SubArrays

print("\nDividing 8X3 array into 4 sub array\n")

subArrays = numpy.split(sampleArray, 4)

# Display the Subarrys

print(subArrays)
```

Que:-10

4. Following is the given numpy array return array of odd rows and even columns
import numpy
sampleArray = numpy.array([[3 ,6, 9, 12], [15 ,18, 21, 24],
[27 ,30, 33, 36], [39 ,42, 45, 48], [51 ,54, 57, 60]])

Ans:-

```
import numpy

sampleArray = numpy.array([[3 ,6, 9, 12], [15 ,18, 21, 24],
[27 ,30, 33, 36], [39 ,42, 45, 48], [51 ,54, 57, 60]])
print("Printing Input Array")
print(sampleArray)

print("\n Printing array of odd rows and even columns")
newArray = sampleArray[::2, 1::2]

print(newArray)
```

Que:-11

5. Given a 6×6 Numpy array arr, write the code to slice the shaded element?

0	**1**	**2**	**3**	**4**	**5**
6	**7**	**8**	**9**	**10**	**11**
12	**13**	**14**	**15**	**16**	**17**
18	**19**	**20**	**21**	**22**	**23**
24	**25**	**26**	**27**	**28**	**29**
30	**31**	**32**	**33**	**34**	**35**

Ans:-

```
print([a1[0,0]],[a1[1,1]],[a1[2,2]],[a1[3,3]],[a1[4,4]],[a1[5,5]])
```

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6. Given a 6×6 Numpy array arr, write the code to slice the shaded elements ?

0	**1**	**2**	**3**	**4**	**5**
6	**7**	**8**	**9**	**10**	**11**
12	**13**	**14**	**15**	**16**	**17**
18	**19**	**20**	**21**	**22**	**23**
24	**25**	**26**	**27**	**28**	**29**
30	**31**	**32**	**33**	**34**	**35**

Ans:-

print([a1[2,2]],[a1[2,3]],[a1[3,2]],[a1[3,3]])

Que-13

7. Find out the output of the code below:

```
import numpy as np
old = np.array([[1,1,1],[1,1,1]])
new = old
new[0,:2]=0
print(old)
```

Ans:-

```
[[0 0 1]
 [1 1 1]]
```

Que:-14

8. **Find out the output of the code below:**

```
import numpy as np
old = np.array([[1,1,1],[1,1,1]])
new = old.copy
new[0,:2]=0
```

print(old)

Ans:-

```
[[1 1 1]
 [1 1 1]]
```