

## Assignment 1-Numpy

**Note:** Each subparts of question 1 contain 0.5 marks and question 2 to 8 has weightage of 1 mark each.

**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.  ]])
```

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

**# 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]])
```

**1c. Write code that reproduces the output shown below.**

```
array([[12, 13, 14, 15],
       [17, 18, 19, 20],
       [22, 23, 24, 25]])
```

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

```
20
```

**1e. Write code that reproduces the output shown below:**

```
array([[ 2],
       [ 7],
       [12]])
```

**1f. Write code that reproduces the output shown below:**

```
array([21, 22, 23, 24, 25])
```

**1g. Write code that reproduces the output shown below:**

```
array([[16, 17, 18, 19, 20],
       [21, 22, 23, 24, 25]])
```

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]])
```

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.

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]])
```

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 |

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 |

7. Find out the output of the code below:

```
In [1]: import numpy as np

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

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)
```

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