

1. Program to get the maximum value from given matrix

```
import numpy as np
import pandas as pd
matrix = [(100, 63, 47),
          (11, 103, 117),
          (49, 36, 55),
          (75, 24, 34),
          (89, 21, 44)
          ]

panda_max = pd.DataFrame(matrix, index = list('symca'), columns = list('psk'))
maxValues = panda_max.max()
print(maxValues)
```

```
p    100
s    103
k    117
dtype: int64
```

#2. Program to select the elements from a given matrix

```
import pandas as pd
import numpy as np

data = np.array(['Dwayne', 'John', 'Steve', 'Hulk', 'Orton', 'Leo', 'Kofi'])
ser = pd.Series(data)

print(ser[:3])
```

```
0    Dwayne
1     John
2    Steve
dtype: object
```

#3. Program to find the sum of values in a matrix

```
import numpy as np

arr = [[114, 117, 19, 33, 44],
       [15, 6, 27, 8, 19],
       [23, 2, 54, 1, 24,]]

print("Sum of array : ", np.sum(arr))
print("Sum of arr(float32) : ", np.sum(arr, dtype = np.float32))
```

```
Sum of array :  506
Sum of arr(float32) :  506.0
```

#4. Program to calculate the sum of the diagonal elements of a NumPy array

```
import numpy as np

n_array = np.array([[95, 25, 15],
                    [30, 24, 2],
                    [14, 25, 47]])
```

```
print("Numpy Matrix is:")
print(n_array)
```

```
trace = np.trace(n_array)
print("Trace of given matrix:")
print(trace)
```

```
Numpy Matrix is:
[[95 25 15]
 [30 24  2]
 [14 25 47]]
Trace of given matrix:
166
```

#5.Program to create a Numpy array filled with all ones.

```
import numpy as np
```

```
a = np.ones(3, dtype = int)
print("Matrix a:", a)
```

```
b = np.ones([4, 4], dtype = int)
print("Matrix b:", b)
```

```
Matrix a: [1 1 1]
Matrix b: [[1 1 1 1]
 [1 1 1 1]
 [1 1 1 1]
 [1 1 1 1]]
```

#6.Program toCreate a Pandas DataFrame from List of Dicts

```
import pandas as pd
```

```
data = [{'401': 'Python', '402': 'ISSA', '403': 'OT', '404': 'EAF', '405': 'KRAI'},
        {'401': 'Programming', '402': 'Security', '403': 'Maths', '404': 'Architecture', '405': 'AI'}]
```

```
dbs= pd.DataFrame(data, index =['subject','Description'])
```

```
print (dbs, "\n")
```

```

           401      402      403      404      405
subject      Python      ISSA      OT      EAF      KRAI
Description  Programming  Security  Maths  Architecture  AI
```

#7.Program toCreating Pandas dataframe using list of lists

```
import pandas as pd
```

```
data = [['Python', 'Basics', 5], ['Python', 'OOPS', 6], ['Python', 'Exception Handling', 2],
```

```
data = [[ 'Python', 'Basics',5], [ 'Python', 'OOPS',6], [ 'Python', 'Exception Handling',2] ,
        ['Python', 'Database',4],
        ['Python', 'REgular Expressions',3],
        ['Python', 'Data Analysis',6] ]
```

```
df = pd.DataFrame(data, columns = ['Category', 'Name','No of lecture'])
print(df )
```

	Category	Name	No of lecture
0	Python	Basics	5
1	Python	OOPS	6
2	Python	Exception Handling	2
3	Python	Database	4
4	Python	REgular Expressions	3
5	Python	Data Analysis	6

```
#8.Program to add column in to Dataframe
import pandas as pd
```

```
data = {'Name': ['Snake', 'Prince', 'Gangsta', 'Wolf'],
        'City': ['Pune', 'Nasik', 'Kolhapur', 'Bangalore'],
        'Qualification': ['Msc', 'MA', 'Msc', 'Msc']}
df = pd.DataFrame(data)
print("Old:\n",df)
df.insert(1, "Age", [21, 23, 24, 21], True)
df
```

Old:

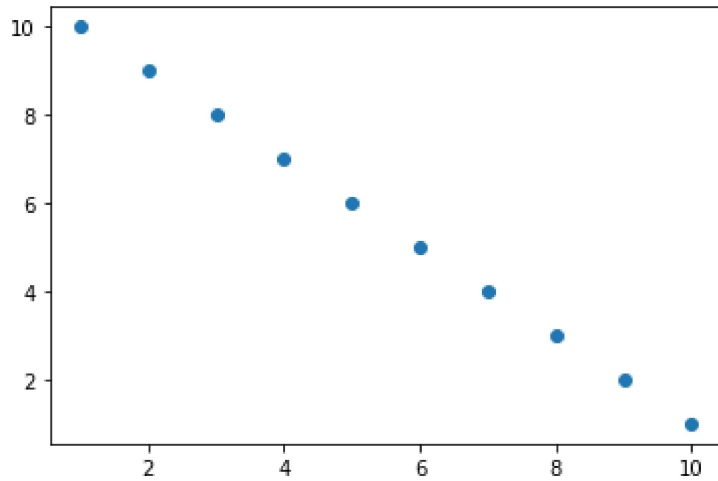
	Name	City	Qualification
0	Snake	Pune	Msc
1	Prince	Nasik	MA
2	Gangsta	Kolhapur	Msc
3	Wolf	Bangalore	Msc

	Name	Age	City	Qualification
0	Snake	21	Pune	Msc
1	Prince	23	Nasik	MA
2	Gangsta	24	Kolhapur	Msc
3	Wolf	21	Bangalore	Msc

```
#9.Program to Plot List of X, Y Coordinates in Matplotlib?
import numpy as np
import matplotlib.pyplot as plt
```

```
x = np.arange(1, 11, 1)
y = np.arange(10, 0, -1)
```

```
# plot our list in X,Y coordinates
plt.scatter(x, y)
plt.show()
```



#10. Program to reads an image, display image and then represents the image in array.

```
import matplotlib.pyplot as plt
import matplotlib.image as img
```

```
testImage = img.imread(https://images.ctfassets.net/mrop88jh71hl/55rrbZfwMaURHZKAUc5o0W/9e5f)
```

```
plt.imshow(testImage)
```

```
print(testImage)
```



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

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

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

...

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

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

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

