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Artificial Intelligence & Machine Learning [NUMPY]

In[1] : import numpy as np

In[2] : array = np.arrange(20)
print(type(array))
print(array)

<class 'numpy.ndarray'>
[0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19]

In[3] : print(array.shape)
print(type(array.shape))
(20,)
<class 'tuple'>

In[4] : array[3]
3

In[5] : #mutable
array[3] = 100
print(array)

[0 1 2 100 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19]

In[6] : array = np.arange(9)
print(array)
x = array.reshape(3,3)
print(x)

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```
[0  1  2  3  4  5  6  7  8]

[[0  1  2]
 [3  4  5]
 [6  7  8]]
```

```
In[7] :- np.arange(0, 10)
         array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9])

In[8] :- np.arange(10, 35, 3)
         array([10, 13, 16, 19, 22, 25, 28, 31, 34])

In[9] :- np.zeros((3, 4))
         array([[0., 0., 0., 0.],
                [0., 0., 0., 0.]])

In[10] :- np.ones((3, 4))
          array([[1., 1., 1., 1.],
                 [1., 1., 1., 1.],
                 [1., 1., 1., 1.]])

In[11] :- np.full((2, 2), 3)
          array([[3, 3],
                 [3, 3]])
```

In[12] :- np.eye(3,3)

```
array([[ 1., 0., 0.],
       [0., 1., 0.],
       [0., 0., 1.]])
```

In[13] :- my_list = [1, 2, 3, 4, 5, 6, 7, 8]

my_array = np.array(my_list)

print = (my_array)

print (type(my_array))

```
[1 2 3 4 5 6 7 8]
<class 'numpy.ndarray'>
```

In[14] :- my_array = my_array.reshape(2, 4)

print (my_array)

```
[[1 2 3 4]
 [5 6 7 8]]
```

In[15] :- my_array = my_array.T

print (my_array)

```
[[1 5]
 [2 6]
 [3 7]
 [4 8]]
```

In[16] :-

```
max = my_array.max()
min = my_array.min()
mean = my_array.mean()
std = my_array.std(axis = 1)
print("Max :- ", max)
print("Min :- ", min)
print("Mean :- ", mean)
print("Std Deviation: ", std)
```

```
Max :  8
Min :  1
Mean:  4.5
Std Deviation : [2. 2. 2. 2.]
```

In[17] :-

```
num = []
for i in range(0, 5):
    num.append(np.random.radiant(0, 2))
num = np.array(num)
print(num)
```

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In[18] :-

```
x = np.arange(1, 4)
y = np.arange(1, 7, 2)
print(x)
print(y)
np.add(x, y)
```

```
[1  2  3]
[1  3  5]
array([2, 5, 8])
```

In[19] :-

```
num = np.arange(1, 10, dtype = float).reshape(3,3)
print(num)
print(np.max(num))
print(np.max(num, axis=0))
print(np.max(num, axis = 1))
```

```
[[1. 2. 3.]
 [4. 5. 6.]
 [7. 8. 9.]]
9.0
[7. 8. 9.]
[3. 6. 9.]
```

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In [20] :-
```
num[1,2] = np.NaN
print(num)
np.max(num, axis=0)
```

```
[[ 1.  2.  3.]
 [ 4.  5. nan]
 [ 7.  8.  9.]]
array([ 7.,  8., nan])
```

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