

->Creation Array Slicing And Attributes.

```
In [1]: import numpy as np
arr = [20,30,40]
print(arr)
```

[20, 30, 40]

```
In [3]: #TYPE
import numpy as np
arr = ([20,30,40])
print(arr)
print(type(arr))
```

[20, 30, 40]
<class 'list'>

```
In [5]: #SLICING
import numpy as np
arr= np.array([10,20,30,40])
print (arr[0:3])
print (arr[0:])
print (arr[2:])
print (arr[:3])
print (arr[:2])
```

[10 20 30]
[10 20 30 40]
[30 40]
[10 20 30]
[10 20]

```
In [7]: #SHAPE
arr= np.array([[10,20,30,40],[40,30,60,20]])
print (np.shape(arr))
print (np.size(arr))
print (np.ndim(arr))
print (arr.dtype)
```

(2, 4)
8
2
int32

->Insepecting An Array.

```
In [ ]: import numpy as np
a = [30,40,20,30,40]
arr = np.array(a)
print(arr)
```

```
In [11]: #FOR SHAPING OF ARRAY
import numpy as np
a = [30,40,20,30,40]
arr = np.array(a)
```

```
print(arr)
print(arr.shape)
```

```
[30 40 20 30 40]
(5,)
```

In [13]: *#FOR LENGTH OF AARRAY*

```
import numpy as np
a = [30,40,20,30,40]
arr = np.array(a)
print(arr)
print(len(arr))
```

```
[30 40 20 30 40]
5
```

In [15]: *#FOR TO SETS(SIZE,LENGTH,AND SHAP)*

```
import numpy as np
a = [[50,40,50],[60,30,40]]
arr = np.array(a)
print(arr)
print(arr.shape)
print(len(arr))
print(np.size(arr))
```

```
[[50 40 50]
 [60 30 40]]
(2, 3)
2
6
```

In [17]: *#FOR TYPE OF ARRAY*

```
import numpy as np
a = [[50,40,50],[60,30,40]]
arr = np.array(a)
print(arr)
print(arr.shape)
print(len(arr))
print(np.size(arr))
print(type(arr))
```

```
[[50 40 50]
 [60 30 40]]
(2, 3)
2
6
<class 'numpy.ndarray'>
```

In [19]: *#FOR CALCULATE HOW MANY INT IN ARRAY.*

```
import numpy as np
a = [[50,40,50],[60,30,40]]
arr = np.array(a)
print(arr)
print(arr.shape)
print(len(arr))
print(np.size(arr))
print(type(arr))
print(arr.dtype)
```

```
[[50 40 50]
 [60 30 40]]
(2, 3)
2
6
<class 'numpy.ndarray'>
int32
```

```
In [21]: #FOR CHANGING THE DATATYPE IN "INT TO FLOAT".(also we can change float to i
import numpy as np
a = [[50,40,50],[60,30,40]]
arr = np.array(a)
print(arr)
print(arr.shape)
print(len(arr))
print(np.size(arr))
print(type(arr))
print(arr.dtype)
print(arr.astype(float))

[[50 40 50]
 [60 30 40]]
(2, 3)
2
6
<class 'numpy.ndarray'>
int32
[[50. 40. 50.]
 [60. 30. 40.]]

->Mathmetical Operation On Array.
```

```
In [23]: #USING ALL TYPE OF MATH OPERATION.
import numpy as np
arr1 = np.array([20,30,30])
arr2 = np.array([30,10,40])
print(arr1+arr2)

[50 40 70]
```

```
In [25]: import numpy as np
arr1 = np.array([20,30,30])
arr2 = np.array([30,10,40])
print(arr1+arr2)
print(np.add(arr1,arr2))

[50 40 70]
[50 40 70]
```

```
In [27]: #FOR TWO DIMENSIONS ARRAY.
import numpy as np
arr1 = np.array([[20,30],[10,30]])
arr2 = np.array([[30,10],[30,40]])
print(arr1+arr2)
print(np.add(arr1,arr2))
```

```
[[50 40]
 [40 70]]
[[50 40]
 [40 70]]
```

```
In [29]: #FOR SUBTRACTION.
import numpy as np
arr1 = np.array([[20,30],[10,30]])
arr2 = np.array([[30,10],[30,40]])
print(arr1-arr2)
```

```
[[ -10  20]
 [ -20 -10]]
```

```
In [31]: #FOR MULTIPLY
import numpy as np
arr1 = np.array([[20,30],[10,30]])
arr2 = np.array([[30,10],[30,40]])
print(arr1*arr2)
```

```
[[ 600  300]
 [ 300 1200]]
```

```
In [33]: #FOR DIVISION
import numpy as np
arr1 = np.array([[20,30],[10,30]])
arr2 = np.array([[30,10],[30,40]])
print(arr1/arr2)
```

```
[[0.66666667 3.         ]
 [0.33333333 0.75       ]]
```

```
In [35]: #FOR ARRAY POWER.
arr1 = np.array([3,4,3,2])
arr2 = np.array([4])  #(jetla braket ma hse etli var multiply thase)
print(np.power(arr1,arr2))
```

```
[ 81 256  81  16]
```

```
In [37]: #FOR SQRT
arr1 = np.array([3,4,3,2])
print(np.sqrt(arr1))
```

```
[1.73205081 2.         1.73205081 1.41421356]
```

-> **Spliting Array.**

```
In [39]: #CONCATENATE(FOR COMBIN TOW ARRAY)
import numpy as np
arr1 = np.array([[30,40],[20,50]])
arr2 = np.array([[5,5],[4,3]])
print(np.concatenate([arr1,arr2]))
```

```
[[30 40]
 [20 50]
 [ 5  5]
 [ 4  3]]
```

```
In [41]: #CONCATENATE ON AXIS(1,HORIZONTAL) OR ALSO WE WRITE np.hstack.
arr1 = np.array([[30,40],[20,50]])
arr2 = np.array([[5,5],[4,3]])
print(np.concatenate([arr1,arr2],axis = 1))

[[30 40  5  5]
 [20 50  4  3]]
```

```
In [43]: #FOR 0(VERTICAL) OR ALSO WE WRITE np.vstack
arr1 = np.array([[30,40],[20,50]])
arr2 = np.array([[5,5],[4,3]])
print(np.concatenate([arr1,arr2],axis = 0))

[[30 40]
 [20 50]
 [ 5  5]
 [ 4  3]]
```

```
In [45]: #FOR SPLIT THE ARRAY.
a = np.array([20,30,40,20,10])
print(np.array_split(a,3))

[array([20, 30]), array([40, 20]), array([10])]
```

```
In [47]: #FOR CHOOSE ONLY ONE OUT OF ALL.
a = np.array([20,30,40,20,10])
b = (np.array_split(a,3))
print(b[1])

[40 20]
```

->Adding And Removing Element In Array.

```
In [49]: #APPEND(ADD IN LAST)
import numpy as np
a = np.array([20,40,50,40])
print(np.append(a,10))

[20 40 50 40 10]
```

```
In [51]: #APPEND FOR TWO DIM.
import numpy as np
a = np.array([[20,40],[50,40]])
print(np.append(a,10))

[20 40 50 40 10]
```

```
In [53]: #FOR INSERT ELE IN ARR.(value start from 0)
print(np.insert(a,1,100))

[ 20 100  40  50  40]
```

```
In [55]: print(np.insert(a,1,[80],axis = 0))

[[20 40]
 [80 80]
 [50 40]]
```

```
In [57]: print(np.insert(a,1,[80,70],axis = 0))
```

```
[[20 40]  
 [80 70]  
 [50 40]]
```

```
In [59]: #DLT ELE IN ARRAY.  
         print(np.delete(a,1))
```

```
[20 50 40]
```