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In [4]: **** NUMPY LIBRARY - RAJESH BOYA ****
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In [6]: #IMPORT NUMPY
import numpy as np

#CREATING A ARRAY
a=np.array([1,2])
print("1-DIMENTIONAL ARRAY : \n",a)
```

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1-DIMENTIONAL ARRAY :
[1 2]
```

```
In [28]: b=np.array([[1,5,5,8,5,5,1,7],[9,4,3,4,6,7,1,2]])
print("2-DIMENTIONAL ARRAY : \n",b)
```

```
2-DIMENTIONAL ARRAY :
[[1 5 5 8 5 5 1 7]
 [9 4 3 4 6 7 1 2]]
```

```
In [12]: c=np.array([[[7,7],[8,9],[9,8]]])
print("3-DIMENTIONAL ARRAY : \n",c)
```

```
3-DIMENTIONAL ARRAY :
[[[7 7]
  [8 9]
  [9 8]]]
```

```
In [14]: #DIMENSIONS
b.ndim
b
```

```
Out[14]: array([[1, 5],
               [1, 2],
               [2, 3],
               [2, 6]])
```

```
In [16]: print("NUMBER OF ROWS AND COLUMNS :",b.shape)
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NUMBER OF ROWS AND COLUMNS : (4, 2)
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In [18]: #DataType
print("DATA TYPE : ",b.dtype)
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DATA TYPE : int32
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In [20]: print("SIZE OF EACH ELEMENT : ",b.itemsize)
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SIZE OF EACH ELEMENT : 4
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In [22]: #1 element=4bytes
print("SIZE OF TOTAL ARRAY IN BYTES : ",b.nbytes)
```

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SIZE OF TOTAL ARRAY IN BYTES : 32
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In [32]: # ACCESSING ELEMENTS

print("ACCESSING A PARTICULAR ELEMENT : ",b[1,4])
```

```
print("ACCESSING A SPECIFIC ROW : ",b[1,:])
print("ACCESSING A SPECIFIC COLUMN : ",b[:,4])
```

```
ACCESSING A PARTICULAR ELEMENT : 6
ACCESSING A SPECIFIC ROW : [9 4 3 4 6 7 1 2]
ACCESSING A SPECIFIC COLUMN : [5 6]
```

```
In [40]: #CREATING ARRAYS
# SYNTAX : [ NO. OF ARRAYS , NO.OF ROWS, NO.OF COLUMNS ]

print("ARRAY OF ZEROS : \n",np.zeros((2,5,4)))
```

```
ARRAY OF ZEROS :
[[[0. 0. 0. 0.]
  [0. 0. 0. 0.]
  [0. 0. 0. 0.]
  [0. 0. 0. 0.]
  [0. 0. 0. 0.]]

 [[0. 0. 0. 0.]
  [0. 0. 0. 0.]
  [0. 0. 0. 0.]
  [0. 0. 0. 0.]
  [0. 0. 0. 0.]]]
```

```
In [44]: print("ARRAY OF ONES : \n",np.ones((5,7)))
```

```
ARRAY OF ONES :
[[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.]]
```

```
In [46]: print("ARRAY OF SPECIFIC NUMBER : \n",np.full((1,3,3),69))
```

```
ARRAY OF SPECIFIC NUMBER :
[[[69 69 69]
  [69 69 69]
  [69 69 69]]]
```

```
In [52]: print("ARRAY OF RANDOM NUMBERS : \n",np.random.rand(3,3))
```

```
ARRAY OF RANDOM NUMBERS :
[[0.38404017 0.06598908 0.47751645]
 [0.64874017 0.59799865 0.29461554]
 [0.21598717 0.40874269 0.82264028]]
```

```
In [54]: print("IDENTITY MATRIX : \n",np.identity(7))
```

```
IDENTITY MATRIX :
[[1. 0. 0. 0. 0. 0. 0.]
 [0. 1. 0. 0. 0. 0. 0.]
 [0. 0. 1. 0. 0. 0. 0.]
 [0. 0. 0. 1. 0. 0. 0.]
 [0. 0. 0. 0. 1. 0. 0.]
 [0. 0. 0. 0. 0. 1. 0.]
 [0. 0. 0. 0. 0. 0. 1.]]
```