20-07-2023 create array with 0's and 1's

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

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

```
[[0 0 0 0]
 [1 1 1 1]]
```

create array and print

In [3]:
```
x = np.array([1,2,3,4])
print(x)
```

```
[1 2 3 4]
```

create array whose initial content is random and print it

In [6]:
```
y = np.random.rand(1,5)
print(y)
```

```
[[0.53627697 0.21262395 0.58548129 0.80698913 0.78518596]]
```

Create an array with the range of values with even intervals

In [7]:
```
print(np.linspace(1,100,2))
```

```
[  1. 100.]
```

create an array with values that are spaced linearly in a specified interval

In [8]:
```
print(np.arange(0,100,+3))
```

```
[ 0  3  6  9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 57 60 63 6
6 69
 72 75 78 81 84 87 90 93 96 99]
```

Access and manipulate elements in the array

In [10]:
```
x[1]
```

Out[10]:
```
2
```

In [11]:
```
x[1]=29
x[1]
```

Out[11]:
```
29
```

Create a 2-dimensional array and check the shape of the array

In [12]:

```
print(np.shape(x))
```

```
(4,)
```

Using the arange() and linspace() function to evenly space values in a specified interval

In [13]:

```
print(np.arange(0,50,2))
print(np.linspace(0,50,num=17,dtype=np.int32))
```

```
[ 0  2  4  6  8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 4
4 46
 48]
[ 0  3  6  9 12 15 18 21 25 28 31 34 37 40 43 46 50]
```

create an array of random values between 0 and 1 in a given shape

In [15]:

```
print(np.random.rand(2,5))
```

```
[[0.09602765 0.831032   0.29664158 0.35093433 0.53813725]
 [0.84731463 0.83714585 0.77396164 0.49332724 0.0947513 ]]
```

Repeat each element of an array by a specified number of times using repeat() and tile() functions

In [18]:

```
print(np.repeat(x,2))
print(np.tile(x,2))
```

```
[ 1  1 29 29  3  3  4  4]
[ 1 29  3  4  1 29  3  4]
```

How do you know the shape and size of an array?

with the help of np.shape and np.size

Create an array that indicates the total number of elements in an array

In [21]:

```
b=np.array([1,2,3,4,5,6,7,8,9])
print(np.size(b))
```

```
9
```

To find the number of dimensions of the array

In [29]:

```
d = np.array([[1,2,3,4,5],[6,7,8,9,10]])
print(np.ndim(d))
```

```
2
```

Create an array and reshape into a new array

In [34]:

```
c = np.array([0,5,10,15,20,25])
print(c)
print()
print(c.reshape(6,1))
```

```
[ 0  5 10 15 20 25]

[[ 0]
 [ 5]
 [10]
 [15]
 [20]
 [25]]
```

Create a null array of size 10

In [35]:

```
f=np.array(10,dtype=np.int32)
print(f)
```

```
10
```

Create any array with values ranging from 10 to 49 and print the numbers whose remainders are zero when divided by 7

In [37]:

```
for g in range(10,50,+1):
    if(g % 7 == 0):
        print(g)
```

```
14
21
28
35
42
49
```

Create an array and check any two conditions and print the output

In [40]:

```
h = np.array([1,2,3,4,5,6,7,8,9,10])
i = h[(h < 10)&(h > 2)]
print(i)
```

```
[3 4 5 6 7 8 9]
```

Use Arithmetic operator and print the output using array

In [41]:

```
j=np.array([1,2,3])
k=np.array([4,5,6])
l=j+k
print(l)
```

```
[5 7 9]
```

use Relational operators and print the results using array

In [43]:

```
m=np.array([2,4,6,8,10,12,14,16,18,20])
n=m[(m>10)]
print(n)
```

```
[12 14 16 18 20]
```

Difference between python and ipython

python is general purposeprogramming language which provides the basic idle operation, functionsetc,. while ipython provides a variety of features like code auto comlpletion and history review and visualization