

```
In [1]: # Matrix Operations OR Arithmetic Operations on ndarray
```

```
In [2]: import numpy as np
```

```
In [4]: a=np.array([[10,20],[30,40]])  
b=np.array([[1,2],[3,4]])  
print(a)
```

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

```
In [6]: print(b)
```

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

```
In [7]: #Matrix Addition  
c=np.add(a,b)  
d=a+b  
print(c)  
print("----OR----")  
print(d)
```

```
[[11 22]  
 [33 44]]  
----OR----  
[[11 22]  
 [33 44]]
```

```
In [12]: #Matrix Substraction
print(a)
print("-"*20)
print(b)
c=np.subtract(a,b)
d=a-b
print("-"*20)
print("RESULT - MATRIX SUBTRACTION")
print("-"*20)
print(c)
print("----OR----")
print(d)
```

```
[[10 20]
 [30 40]]
-----
[[1 2]
 [3 4]]
-----
RESULT - MATRIX SUBTRACTION
-----
[[ 9 18]
 [27 36]]
----OR----
[[ 9 18]
 [27 36]]
```

```
In [14]: #Matrix Multiplication---Elementwise Matrix Multiplication
print(a)
print("-"*20)
print(b)
c=np.multiply(a,b)
d=a*b
print("-"*20)
print("RESULT - MATRIX MULTIPLICATION")
print("-"*20)
print(c)
print("----OR----")
print(d)
```

```
[[10 20]
 [30 40]]
-----
[[1 2]
 [3 4]]
-----
RESULT - MATRIX MULTIPLICATION
-----
[[ 10 40]
 [ 90 160]]
----OR----
[[ 10 40]
 [ 90 160]]
```

In [15]: *#Matrix Multiplication---Actual Matrix Multiplication*

```
print(a)
print("-"*20)
print(b)
c=np.matmul(a,b)
d=np.dot(a,b)
print("-"*20)
print("RESULT - Actual Matrix Multiplication")
print("-"*20)
print(c)
print("----OR----")
print(d)
```

```
[[10 20]
 [30 40]]
-----
[[1 2]
 [3 4]]
-----
RESULT - Actual Matrix Multiplication
-----
[[ 70 100]
 [150 220]]
----OR----
[[ 70 100]
 [150 220]]
```

In [16]: *#Matrix Division*

```
print(a)
print("-"*20)
print(b)
c=np.divide(a,b)
d=a/b
print("-"*20)
print("RESULT - MATRIX DIVISION")
print("-"*20)
print(c)
print("----OR----")
print(d)
```

```
[[10 20]
 [30 40]]
-----
[[1 2]
 [3 4]]
-----
RESULT - MATRIX DIVISION
-----
[[10. 10.]
 [10. 10.]]
----OR----
[[10. 10.]
 [10. 10.]]
```

```
In [17]: #Matrix Floor Division
print(a)
print("-"*20)
print(b)
c=np.floor_divide(a,b)
d=a//b
print("-"*20)
print("RESULT - MATRIX FLOOR DIVISION")
print("-"*20)
print(c)
print("----OR----")
print(d)
```

```
[[10 20]
 [30 40]]
-----
[[1 2]
 [3 4]]
-----
RESULT - MATRIX FLOOR DIVISION
-----
[[10 10]
 [10 10]]
----OR----
[[10 10]
 [10 10]]
```

```
In [18]: #Matrix Modulo Division
print(a)
print("-"*20)
print(b)
c=np.mod(a,b)
d=a%b
print("-"*20)
print("RESULT - MATRIX MODULO DIVISION")
print("-"*20)
print(c)
print("----OR----")
print(d)
```

```
[[10 20]
 [30 40]]
-----
[[1 2]
 [3 4]]
-----
RESULT - MATRIX MODULO DIVISION
-----
[[0 0]
 [0 0]]
----OR----
[[0 0]
 [0 0]]
```

```
In [19]: #Matrix Exponetiation
print(a)
print("-"*20)
print(b)
c=np.power(a,b)
d=a**b
print("-"*20)
print("RESULT - MATRIX EXPONENTIATION")
print("-"*20)
print(c)
print("----OR----")
print(d)
```

```
[[10 20]
 [30 40]]
-----
[[1 2]
 [3 4]]
-----
RESULT - MATRIX EXPONENTIATION
-----
[[      10      400]
 [ 27000 2560000]]
----OR----
[[      10      400]
 [ 27000 2560000]]
```

In []: