

Write Python program using NumPy

- To find the addition of two matrices
- To find the product of two matrices
- To find the transpose of a matrix

In [3]:

```
# input the values from user using 2 for loops
import numpy as np
r=int(input("enter no.of rows: "))
c=int(input("enter no.of columns: "))
matrix=[]
print("start entering the numbers: ")
for i in range(r):
    a=[]
    for j in range(c):
        a.append(int(input()))
    matrix.append(a)

# For printing the matrix
for i in range(r):
    for j in range(c):
        print(matrix[i][j], end = " ")
    print()
m1=np.array(matrix)
print(m1)
1
print('input the values from user using list comprehension')
r=int(input("enter no.of rows: "))
c=int(input("enter no.of columns: "))
matrix=[]
print("start entering the numbers: ")
matrix=[[int(input()) for i in range(c)] for j in range(r)]
#For printing the matrix
for i in range(r):
    for j in range(c):
        print(matrix[i][j], end = " ")
    print()
m2=np.array(matrix)
print(m1)
```

```
enter no.of rows: 2
enter no.of columns: 2
start entering the numbers:
12
22
23
45
12 22
23 45
[[12 22]
 [23 45]]
input the values from user using list comprehension
enter no.of rows: 2
enter no.of columns: 2
start entering the numbers:
22
56
```

```

45
47
22 56
45 47
[[12 22]
 [23 45]]

```

```

In [5]: a=np.matrix([[18,23],[29,51]])
        b=np.matrix([[34,12],[41,19]])
        print ("Addition of two matrices: ")
        print (np.add(a,b))

```

```

Addition of two matrices:
[[52 35]
 [70 70]]

```

```

In [6]: print ("subtraction of two matrices: ")
        print (np.subtract(a,b))

```

```

subtraction of two matrices:
[[-16  11]
 [-12  32]]

```

```

In [7]: print ("multiplication of two matrices element wise : ")
        print (np.multiply(a,b))

```

```

multiplication of two matrices element wise :
[[ 612  276]
 [1189  969]]

```

```

In [8]: print ("multiplication of two matrices i.e., dot product : ")
        print (np.dot(a,b))

```

```

multiplication of two matrices i.e., dot product :
[[1555  653]
 [3077 1317]]

```

```

In [9]: print ("square root is : ")
        print ("for a matrix : \n",np.sqrt(a),"\nfor b matrix : \n",np.sqrt(b))

```

```

square root is :
for a matrix :
[[4.24264069 4.79583152]
 [5.38516481 7.14142843]]
for b matrix :
[[5.83095189 3.46410162]
 [6.40312424 4.35889894]]

```

```

In [35]: print ("Matrix transposition : ")
        print("before transpose a: \n",a,"\nbefore transpose b: \n",b)
        print ("for a matrix : \n",a.T,"\nfor b matrix : \n",b.T)

```

```

Matrix transposition :
before transpose a:
[[12 23]
 [21  5]]
before transpose b:
[[32  1]
 [23 45]]

```

```
[11 10]]  
for a matrix :  
[[12 21]  
[23 5]]  
for b matrix :  
[[32 11]  
[ 1 10]]
```