

# Pranav Polavarapu - 19BTRCR008

## 7. Write Python program using NumPy ¶

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

```
In [1]: # 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
21
11
999
12 21
11 999
[[ 12  21]
 [ 11 999]]
input the values from user using list comprehension
enter no.of rows: 3
enter no.of columns: 3
start entering the numbers:
34
35
36
7
8
9
0
100
1001
34 35 36
7 8 9
0 100 1001
[[ 12  21]
 [ 11 999]]

```

```

In [2]: 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 [3]: print ("subtraction of two matrices: ")
        print (np.subtract(a,b))

```

```

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

```

```

In [4]: print ("multiplication of two matrices element wise : ")
        print (np.multiply(a,b))

```

```

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

```

```
In [5]: 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 [6]: 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 [7]: 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:
[[18 23]
 [29 51]]
before transpose b:
[[34 12]
 [41 19]]
for a matrix :
[[18 29]
 [23 51]]
for b matrix :
[[34 41]
 [12 19]]
```