

Introduction to matrices and matrix multiplication

```
In [ ]: import numpy as np

# Creating a 2D numpy matrix
a = np.matrix('1 2 3; 4 5 6')
#Creating a 2D numpy array
b = np.array([[1, 2, 3], [4, 5, 6]])

print(b)
print(a)
```

```
[[1 2 3]
 [4 5 6]]
[[1 2 3]
 [4 5 6]]
```

Printing Rows

```
In [ ]: # Printing the first row
print(a[1, :])
```

```
[[4 5 6]]
```

Printing Columns

```
In [ ]: # Printing the second column
print(a[:, 2])
```

```
[[3]
 [6]]
```

Printing

Printing an element

```
In [ ]: # Printing the 0th row 1st element
print(a[0, 1])
```

```
2
```

Order of the Matrix

```
In [ ]: print(a.shape)
```

```
(2, 3)
```

Matrix Operations

Addition

```
In [ ]: # Defining matrices
a = np.matrix('1 1; 2 43')
b = np.matrix('1 4; 1 32')

# Printing the addition
print(a + b)
```

```
[[ 2  5]
 [ 3 75]]
```

Scaler Multiplication

```
In [ ]: # Defining matrix
a = np.matrix('2 1; 2 2; 3 3')

# Printing scaler multiplication
print(4 * a)
```

```
[[ 8  4]
 [ 8  8]
 [12 12]]
```

Matrix Multiplication

```
In [ ]: # Defining matrices
a = np.matrix('1 2 3; 4 5 6')
b = np.matrix('2 4 5; 2 45 6; 2 1 6')

# Printing matrix multiplication
print(a * b)
```

```
[[ 12  97  35]
 [ 30 247  86]]
```

Transpose of a Matrix

```
In [ ]: # Defining matrix
a = np.matrix('2 4 6; 2 43 56; 2 3 54')
#Transposing the matrix
b = np.matrix.transpose(a)

#Printing the transposed matrix
print(b)
```

```
[[ 2  2  2]
 [ 4 43  3]
 [ 6 56 54]]
```