# Numpy Exercise

August 16, 2021

```
[ ]: #Numpy Excsrcise
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```
[1]: import numpy as np
```

```
[2]: # Create an array of 5 zeros
     arr = np.zeros(5)
```

```
[3]: arr
```

```
[3]: array([0., 0., 0., 0., 0.])
```

```
[6]: # creat an array of 12 eight

     arr = np.zeros(12)+8
     arr
```

```
[6]: array([8., 8., 8., 8., 8., 8., 8., 8., 8., 8., 8., 8.])
```

```
[9]: #creat array of integers between 5 and 10
     arr = np.arange(5, 11)
     arr
```

```
[9]: array([ 5,  6,  7,  8,  9, 10])
```

```
[12]: # creat array of all the even integers between 0 and 10

      arr = np.arange(0,10, 2)
      arr
```

```
[12]: array([0, 2, 4, 6, 8])
```

```
[15]: # for odd integer

      arr = np.arange(0,10,2) + 1
      arr
```

```
[15]: array([1, 3, 5, 7, 9])
```

```
[16]: arr[arr % 2 == 1]
```

```
[16]: array([1, 3, 5, 7, 9])
```

```
[21]: # create 3x3 matrix with value 1 to 9

      arr = np.arange(1,10).reshape(3,3)
      arr
```

```
[21]: array([[1, 2, 3],
             [4, 5, 6],
             [7, 8, 9]])
```

```
[22]: # generate 5 random floting point number

      np.random.rand(5)
```

```
[22]: array([0.4319193 , 0.56648821, 0.28301558, 0.21827502, 0.03645732])
```

```
[23]: # generate 5 random floting point number between 0 to 10

      np.random.rand(5)*10
```

```
[23]: array([7.65689449, 9.92724647, 0.60132508, 8.99031977, 5.07215249])
```

```
[24]: # generate 10 random number sampled from normal distrbution

      np.random.randn(5)
```

```
[24]: array([-0.27527338,  1.0777907 ,  0.16207929, -0.38305645,  0.00665997])
```

```
[25]: # use linspace to create an array

      np.linspace(0.1,1,10)
```

```
[25]: array([0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1. ])
```

```
[34]: # creat a matrix number between1 to 16

      mat = np.arange(1,17)
      mat
```

```
[34]: array([ 1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16])
```

```
[35]: mat = np.arange(1,17).reshape(4,4)
      mat
```

```
[35]: array([[ 1,  2,  3,  4],
             [ 5,  6,  7,  8],
             [ 9, 10, 11, 12],
```

```
          [13, 14, 15, 16]])
```

[36]:
```
# grab number 12

mat[2,3]
```

[36]: 12

[40]:
```
# select 1st row off matrix

mat[0]
```

[40]: array([1, 2, 3, 4])

[42]:
```
#select 1st column

mat[:,0]
```

[42]: array([ 1,  5,  9, 13])

[45]:
```
mat[:,0:1]
```

[45]:
```
array([[ 1],
       [ 5],
       [ 9],
       [13]])
```

[47]:
```
mat[2:,2:]
```

[47]:
```
array([[11, 12],
       [15, 16]])
```

[48]:
```
# calculate the sum of matrix

mat.sum()
```

[48]: 136

[49]:
```
# sum of the rows

mat.sum(axis = 1)
```

[49]: array([10, 26, 42, 58])

[50]:
```
# get standard deviation

mat.std()
```

[50]: 4.6097722286464435

[51]:
```
# create identity matrix 4x4

np.eye(4)
```

[51]: array([[1., 0., 0., 0.],
           [0., 1., 0., 0.],
           [0., 0., 1., 0.],
           [0., 0., 0., 1.]])

[ ]: