Numpy Exercise- 21BIT0433

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1 NumPy Exercises

Now that we've learned about NumPy let's test your knowledge. We'll start off with a few simple tasks, and then you'll be asked some more complicated questions.

Import NumPy as np

```
[1]: import numpy as np
```

Create an array of 10 zeros

```
[7]: x=np.zeros(10)
```

Create an array of 10 ones

```
[6]: x=np.ones(10)
```

Create an array of 10 fives

```
[4]: z=np.full(10,5.0)
```

Create an array of the integers from 10 to 50

```
[8]: x=np.arange(10,51,1)
```

Create an array of all the even integers from 10 to 50

```
[9]: x=np.arange(10,51,2)
```

Create a 3x3 matrix with values ranging from 0 to 8

```
[10]: x=np.arange(0,9).reshape(3,3)
```

Create a 3x3 identity matrix

```
[11]: x=np.eye(3)
```

Use NumPy to generate a random number between 0 and 1

```
[12]: x=np.random.random()
```

Use NumPy to generate an array of 25 random numbers sampled from a standard normal distribution

```
[13]: x=np.random.rand(25)
```

Create the following matrix:

```
[14]: x=np.arange(0.01, 1.01, 0.01).reshape(10, 10)
```

Create an array of 20 linearly spaced points between 0 and 1:

```
[15]: x=np.linspace(0,1,20)
```

1.1 Numpy Indexing and Selection

Now you will be given a few matrices, and be asked to replicate the resulting matrix outputs:

```
[20]: mat = np.arange(1,26).reshape(5,5)
```

```
[0]: # WRITE CODE HERE THAT REPRODUCES THE OUTPUT OF THE CELL BELOW
     # BE CAREFUL NOT TO RUN THE CELL BELOW, OTHERWISE YOU WON'T
     # BE ABLE TO SEE THE OUTPUT ANY MORE
```

```
[19]: x=mat [2:5,1:5]
```

```
[0]: # WRITE CODE HERE THAT REPRODUCES THE OUTPUT OF THE CELL BELOW
     # BE CAREFUL NOT TO RUN THE CELL BELOW, OTHERWISE YOU WON'T
     # BE ABLE TO SEE THE OUTPUT ANY MORE
```

```
[21]: x=mat[3,4]
```

```
[0]: # WRITE CODE HERE THAT REPRODUCES THE OUTPUT OF THE CELL BELOW
     # BE CAREFUL NOT TO RUN THE CELL BELOW, OTHERWISE YOU WON'T
     # BE ABLE TO SEE THE OUTPUT ANY MORE
```

```
[22]: x = mat[0:3, 1:2]
```

```
[0]: # WRITE CODE HERE THAT REPRODUCES THE OUTPUT OF THE CELL BELOW
     # BE CAREFUL NOT TO RUN THE CELL BELOW, OTHERWISE YOU WON'T
     # BE ABLE TO SEE THE OUTPUT ANY MORE
```

```
[23]: x=mat[-1]
```

```
[0]: # WRITE CODE HERE THAT REPRODUCES THE OUTPUT OF THE CELL BELOW
     # BE CAREFUL NOT TO RUN THE CELL BELOW, OTHERWISE YOU WON'T
     # BE ABLE TO SEE THE OUTPUT ANY MORE
```

```
[24]: x=mat[3:5,0:5]
```

1.1.1 Now do the following

Get the sum of all the values in mat

```
[25]: x=np.sum(mat)
```

Get the standard deviation of the values in mat

```
[26]: x=np.std(mat)
```

Get the sum of all the columns in mat

```
[27]: x=np.sum(mat,axis=0)
```