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Part 1 – Implement Basic Data Structures using Numpy, Pandas

1. Lists
2. Arrays
3. Identify their type using type()
4. Perform mathematical operations on these datasets created - multiplication, division, poweroff
5. Combine text with Numpy fuction to generate a textual output - "Addition of Two: array1 +array 2
6. Implement np.sin(), log(), log2(), np.exp()

```
import numpy as np
list1=[300,400,500]
array1=np.array(list1)
array1
```

```
array([300, 400, 500])
```

+ Code

+ Text

```
type(list1)
```

```
list
```

```
type(array1)
```

```
numpy.ndarray
```

```
list2=[400,500,600]
array2=np.array(list2)
array2
```

```
array([400, 500, 600])
```

```
type(list2)
```

```
list
```

```
type(array2)
```

```
numpy.ndarray
```

```
print("array2 multiplied by array1: ",array1*array2)
print("array2 divided by array1: ",array2/array1)
print("array2 raised to the power of array1: ",array2**array1)
```

```
array2 multiplied by array1: [120000 200000 300000]
array2 divided by array1: [1.33333333 1.25 1.2]
array2 raised to the power of array1: [0 0 0]
```

```
print("Sine: ",np.sin(array1))
print("Natural logarithm: ",np.log(array1))
print("Base-10 logarithm: ",np.log10(array1))
print("Base-2 logarithm: ",np.log2(array1))
print("Exponential: ",np.exp(array1))
```

```
Sine: [-0.99975584 -0.85091936 -0.46777181]
Natural logarithm: [5.70378247 5.99146455 6.2146081 ]
Base-10 logarithm: [2.47712125 2.60205999 2.69897 ]
Base-2 logarithm: [8.22881869 8.64385619 8.96578428]
Exponential: [1.94242640e+130 5.22146969e+173 1.40359222e+217]
```

```
list2=[3,2,1]
array2=np.array(list2)
array2
```

```
array([3, 2, 1])
```

```
print("Adding two numpy arrays {array1} and {array2} together:", array1+array2)
```

➦ Adding two numpy arrays {array1} and {array2} together: [303 402 501]

```
print(f"Adding two numpy arrays {array1} and {array2} together: {array1+array2}")
```

➦ Adding two numpy arrays [300 400 500] and [3 2 1] together: [303 402 501]

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➦ File "<ipython-input-10-8acc93d318fe>", line 1
Part-02: Lab Task is to visualize the datasets or data using Matplotlib builtin function Graphs
^
SyntaxError: leading zeros in decimal integer literals are not permitted; use an 0o prefix for octal integers

```
people = ['sriram', 'saicharan', 'ali', 'suhaib', 'muneer', 'daniel']  
age = [21, 12, 32, 45, 37, 18, 28, 52, 5, 40, 48, 15]  
weight = [55, 35, 77, 68, 70, 60, 72, 69, 18, 65, 82, 48]  
height = [180, 135, 170, 165, 173, 168, 175, 159, 105, 171, 155, 158]
```

```
import matplotlib.pyplot as plt
```

```
plt.scatter(weight, height)  
plt.title("Relationship between weight and height of patients")  
plt.xlabel("weight")  
plt.ylabel("height")  
plt.show()
```