Practical – 2

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

[2]
```
# Find the roots of the polynomial using Numpy

r = [1, 2, 1]
print(np.roots(r))
```

```
[-1. -1.]
```

[3]
```
# Calculate the mean across dimension in a 2D NumPy array.

x = np.array([[40, 30], [50, 10]])
print("Original array:")
print(x)
print("Mean of each column:")
print(x.mean(axis=0))
print("Mean of each row:")
print(x.mean(axis=1))
```

```
Original array:
[[40 30]
 [50 10]]
Mean of each column:
[45. 20.]
Mean of each row:
[35. 30.]
```

[4]
```
# Calculate the average, variance and standard deviation in Python using NumPy.

array = np.arange(10)
print(array)

a = np.mean(array)
print("\nMean: ", a)

b = np.std(array)
print("\nstd: ", b)

c = np.var(array)
print("\nvariance: ", c)
```

```
[0 1 2 3 4 5 6 7 8 9]

Mean:  4.5

std:  2.8722813232690143

variance:  8.25
```

[5]
```
# Calculate the sum of all columns in a 2D NumPy array.

num = np.arange(25)
array = np.reshape(num, [5, 5])
print("Original array:")
print(array)
result  = array.sum(axis=0)
print("\nSum of all columns:")
print(result)
```

```
Original array:
[[ 0  1  2  3  4]
 [ 5  6  7  8  9]
 [10 11 12 13 14]
 [15 16 17 18 19]
 [20 21 22 23 24]]

Sum of all columns:
[50 55 60 65 70]
```

[6]
```
# How to get the floor, ceiling and truncated values of the elements of a numpy array?

x = np.array([-1.8,-1.3,-1.2,0.2,1,1.2,1.5])
print("Original array:")
print(x)
print("Floor values of array elements:")
print(np.floor(x))
print("Ceil values of array elements:")
print(np.ceil(x))
print("Truncated values of array elements:")
print(np.trunc(x))
```

```
Original array:
[-1.8 -1.3 -1.2  0.2  1.   1.2  1.5]
Floor values of array elements:
[-2. -2. -2.  0.  1.  1.  1.]
Ceil values of array elements:
[-1. -1. -1.  1.  1.  2.  2.]
Truncated values of array elements:
[-1. -1. -1.  0.  1.  1.  1.]
```