1. Create a 1D NumPy array and assign values. Then print the values.
2. Create a 2D NumPy array and assign values. Then print the values.
3. Add a constant value to all elements of a 2D NumPy array.
4. Subtract a constant value to all elements of a 2D NumPy array.
5. Calculate the sum of all elements of a 2D NumPy array.
6. Perform element wise sum between two 2D NumPy arrays.
7. Perform element wise subtraction between two 2D NumPy arrays.
8. Perform matrix multiplication between two 2D NumPy arrays.

Assignment 1

Python Basics

1. Create a 1D NumPy array and assign values. Then print the values.

```
import numpy as np
# Create a 1D NumPy array and assign values
array_1d = np.array([1, 2, 3, 4, 5])
# Print the values
print("1D NumPy Array:", array_1d)
```

Output: 1D NumPy Array: [1 2 3 4 5]

2. Create a 2D NumPy array and assign values. Then print the values.

```
import numpy as np
# Create a 2D NumPy array and assign values
array_2d = np.array([[1, 2, 3], [4, 5, 6], [7, 8, 9]])
# Print the values
print("2D NumPy Array:\n", array_2d)
```

Output:
2D NumPy Array:
[[1 2 3]
[4 5 6]
[7 8 9]]

3. Add a constant value to all elements of a 2D NumPy array.

```
import numpy as np

# Create a 2D NumPy array
array_2d = np.array([[1, 2, 3], [4, 5, 6], [7, 8, 9]])
# Add a constant value (e.g., 5) to all elements
result = array_2d + 5
# Print the result
print("Array after adding 5:\n", result)
```

Output:
Array after adding 5:
[[6 7 8]
[9 10 11]
[12 13 14]]

4. Subtract a constant value to all elements of a 2D NumPy array.

```
import numpy as np

# Create a 2D NumPy array
array_2d = np.array([[1, 2, 3], [4, 5, 6], [7, 8, 9]])
# Subtract a constant value (e.g., 3) from all elements
result = array_2d - 3
# Print the result
print("Array after subtracting 3:\n", result)
```

Output:
Array after subtracting 3:
[[-2 -1 0]
[1 2 3]
[4 5 6]]

5. Calculate the sum of all elements of a 2D NumPy array.

```
import numpy as np

# Create a 2D NumPy array
array_2d = np.array([[1, 2, 3], [4, 5, 6], [7, 8, 9]])
# Calculate the sum of all elements
sum_of_elements = np.sum(array_2d)
# Print the result
print("Sum of all elements:", sum_of_elements)
```

Output: Sum of all elements: 45

6. Perform element wise sum between two 2D NumPy arrays.

```
import numpy as np

# Create two 2D NumPy arrays
array_2d_1 = np.array([[1, 2, 3], [4, 5, 6], [7, 8, 9]])
array_2d_2 = np.array([[9, 8, 7], [6, 5, 4], [3, 2, 1]])
# Perform element-wise sum
result = array_2d_1 + array_2d_2
# Print the result
print("Element-wise sum:\n", result)
```

Output:
Element-wise sum:
[[10 10 10]

[10 10 10]
[10 10 10]]

7. Perform element wise subtraction between two 2D NumPy arrays.

```
import numpy as np

# Create two 2D NumPy arrays
array_2d_1 = np.array([[1, 2, 3], [4, 5, 6], [7, 8, 9]])
array_2d_2 = np.array([[9, 8, 7], [6, 5, 4], [3, 2, 1]])
# Perform element-wise subtraction
result = array_2d_1 - array_2d_2
# Print the result
print("Element-wise subtraction:\n", result)
```

Output:
Element-wise subtraction:
[[-8 -6 -4]
[-2 0 2]
[4 6 8]]

8. Perform matrix multiplication between two 2D NumPy arrays.

```
import numpy as np

# Create two 2D NumPy arrays
array_2d_1 = np.array([[1, 2], [3, 4]])
array_2d_2 = np.array([[5, 6], [7, 8]])
# Perform matrix multiplication
result = np.matmul(array_2d_1, array_2d_2)
# Print the result
print("Matrix multiplication result:\n", result)
```

Output:
Matrix multiplication result:
[[19 22]
[43 50]]