16 - Shruti Gauchandra

Experiment - 09

```
import numpy as np

# 1. Array Creation Techniques
print("1. Array Creation Techniques")

# a. Creating an array from a list
array_from_list = np.array([1, 2, 3, 4, 5])
array_from_list
```

```
1. Array Creation Techniques
array([1, 2, 3, 4, 5])
```

```
# b. Using arange()
array_arange = np.arange(0, 10, 2)
array_arange
```

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

```
# c. Using linspace()
array_linspace = np.linspace(0, 10, 5)  # Divides 0 to 10 into 5 points
array_linspace
```

```
array([ 0. ,  2.5,  5. ,  7.5, 10. ])
```

```
# d. Using zeros()
array_zeros = np.zeros((3, 3))
array_zeros
```

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

```
# e. Using ones()
array_ones = np.ones((2, 2))
array_ones
```

```
array([[1., 1.],
       [1., 1.]])
```

```
# f. Using eye() for identity matrix
array_eye = np.eye(3)
array_eye
```

```
array([[1., 0., 0.],
       [0., 1., 0.],
       [0., 0., 1.]])
```

```
# g. Using random() for random values
array_random = np.random.random((3, 3))
array_random
```

```
array([[0.68133772, 0.80250334, 0.56167938],
       [0.64575991, 0.1971159 , 0.22764902],
       [0.84712147, 0.58081005, 0.28062614]])
```

```
# 2. Different NumPy Methods
print("\n2. NumPy Methods")

# a. Reshaping an array
```

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

```
2. NumPy Methods
array([[1, 2, 3],
       [4, 5, 6],
       [7, 8, 9]])
```

```
# b. Transposing an array
transposed_array = reshaped_array.T
transposed_array
```

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

```
# c. Mathematical operations
array_math = np.array([1, 2, 3])
array_math + 2
array_math * 3
np.sqrt(array_math)
```

```
array([1.        , 1.41421356, 1.73205081])
```

```
# d. Aggregation methods
np.sum(array_math)
np.mean(array_math)
np.max(array_math)
np.min(array_math)
```

```
np.int64(1)
```

```
# e. Concatenation of arrays
array_a = np.array([1, 2, 3])
array_b = np.array([4, 5, 6])
concat_array = np.concatenate((array_a, array_b))
concat_array
```

```
array([1, 2, 3, 4, 5, 6])
```

```
# f. Sorting an array
unsorted_array = np.array([3, 1, 4, 2])
sorted_array = np.sort(unsorted_array)
sorted_array
```

```
array([1, 2, 3, 4])
```

```
# g. Indexing and Slicing
indexed_value = array_math[1]  # Indexing
indexed_value
sliced_array = array_math[1:3]  # Slicing
sliced_array
```

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

```
# h. Boolean Masking
boolean_mask = array_math > 2
boolean_mask
array_math[boolean_mask]
```

```
array([3])
```

```
Start coding or generate with AI.
```