Creation Of Array (1D,2D and Multidimennsional array)

In [1]:
```
#Exp no.:5
```

In [2]:
```
#Aim : Creation of Array (1D,2D and Multidimennsional array) using numpy
```

In [3]:
```
#Name:Vedant M.Padole
#Roll no:42
#Sec:C
#Subject:ET1
#Date:
```

In [4]:
```
import numpy as np
```

In [5]:
```
arr1=np.array([10,20,30,40,50])
```

In [6]:
```
arr1
```

Out[6]:
```
array([10, 20, 30, 40, 50])
```

In [7]:
```
arr2=np.array([[10,20,30,40,50],[60,70,80,90,100]])
```

In [8]:
```
arr2
```

Out[8]:
```
array([[ 10,  20,  30,  40,  50],
       [ 60,  70,  80,  90, 100]])
```

In [9]:
```
arr3=np.array([[10,20,30,40,50],[60,70,80,90,100],[15,25,35,45,55]])
```

In [10]:
```
arr3
```

Out[10]:
```
array([[ 10,  20,  30,  40,  50],
       [ 60,  70,  80,  90, 100],
       [ 15,  25,  35,  45,  55]])
```

In [11]:
```
# Array of zeros
zeros_arr = np.zeros((2, 3))
print("Zeros Array:\n", zeros_arr)
# Array of ones
ones_arr = np.ones((3, 3))
print("Ones Array:\n", ones_arr)
# Identity matrix
identity_arr = np.eye(3)
print("Identity Matrix:\n", identity_arr)
# Range of numbers In [1]: In [2]: In [3]: In [4]: In [5]: In [6]: Out[6]: In [7]: In
range_arr = np.arange(0, 10, 2)
print("Array with np.arange:\n", range_arr)
# Evenly spaced values
linspace_arr = np.linspace(0, 1, 5)
print("Array with np.linspace:\n", linspace_arr)
```

```
Zeros Array:
 [[0. 0. 0.]
 [0. 0. 0.]]
Ones Array:
 [[1. 1. 1.]
```

```
 [1. 1. 1.]
[1. 1. 1.]]
Identity Matrix:
[[1. 0. 0.]
[0. 1. 0.]
[0. 0. 1.]]
Array with np.arange:
[0 2 4 6 8]
Array with np.linspace:
 [0.   0.25 0.5 0.75 1. ]
```

In [12]:
```
print("Shape of arr2d:", arr2.shape)
print("Size of arr2d:", arr2.size)
print("Data type of arr2d:", arr2.dtype)
```

```
Shape of arr2d: (2, 5)
Size of arr2d: 10
Data type of arr2d: int32
```

In [13]:
```
reshaped = arr2.reshape(2, 5)
print("Reshaped Array:\n", reshaped)
# Slicing
print("First row of arr2d:", arr2[0])
print("Element at row 1, col 2:", arr2[1, 2])
```

```
Reshaped Array:
 [[ 10 20 30 40 50]
 [ 60 70 80 90 100]]
First row of arr2d: [10 20 30 40 50]
Element at row 1, col 2: 80
```

In [15]:
```
a = np.array([1, 2, 3])
b = np.array([4, 5, 6])
print("Addition:", a + b)
print("Multiplication:", a * b)
print("Square root:", np.sqrt(a))
```

```
Addition: [5 7 9]
Multiplication: [ 4 10 18]
Square root: [1.         1.41421356 1.73205081]
```

Conclusion :

In [13]: In [16]: In[17]:Theexperiment successfully demonstrated the creation and manipulation of 1D, 2D, and multi-dimensional arrays, which are fundamental structures in data science and statistics. Mastery of these array types is essential for efficient data handling, analysis, and computational operations.

In [ ]: