

Experiment–1

Aim:

To understand and apply various data pre-processing techniques.

Code:

```
1  import numpy as np
2  print("NumPy Version:", np.version )
3  print("="*50)
4
5  # 1. Creating Arrays
6  print("1. Creating Arrays")
7  print("-"*30)
8
9  # From Python list
10 arr1 = np.array([1, 2, 3, 4, 5])
11 print("From list:", arr1)
12 print("Type:", type(arr1))
13 print("Data type:", arr1.dtype)
14
15 # 2D Array (Matrix)
16 arr2d = np.array([[1, 2, 3], [4, 5, 6]])
17 print("\n2D Array:")
18 print(arr2d)
19
20 # Zeros, Ones, Empty
21 zeros = np.zeros(5)
22 ones = np.ones((3, 4))
23 empty = np.empty(4) # uninitialized values
24 print("\nZeros:", zeros)
25 print("Ones (3x4) : \n", ones)
26
27 # Range of numbers
28 range_arr = np.arange(0, 20, 2) # start, stop, step
29 print("arange(0,20,2) :", range_arr)
30 # Evenly spaced numbers
31 linspace_arr = np.linspace(0, 1, 5) # 5 numbers from 0 to 1
32 print("linspace(0,1,5) :", linspace_arr)
33
34 # Random numbers
35 print("\nRandom Arrays:")
36 print("Random (0-1) :", np.random.random(5))
37 print("Random integers :", np.random.randint(1, 100, size=6))
38 print("="*50)
39
40 # 2. Array Attributes
41 print("2. Array Attributes")
```