Experiment No. 9
Program to manipulate arrays using NumPy
Date of Performance:
Date of Submission:

Experiment No. 9

Title: Program to manipulate arrays using NumPy

Aim: To study and implement arrays manipulation using NumPy

Objective: To introduce NumPy package

Theory:

Numpy is a general-purpose array-processing package. It provides a high-performance multidimensional array object, and tools for working with these arrays. It is the fundamental package for scientific computing with Python.
Besides its obvious scientific uses, Numpy can also be used as an efficient multi-dimensional container of generic data.
Array in Numpy is a table of elements (usually numbers), all of the same type, indexed by a tuple of positive integers. In Numpy, number of dimensions of the array is called rank of the array.A tuple of integers giving the size of the array along each dimension is known as shape of the array. An array class in Numpy is called as **ndarray**. Elements in Numpy arrays are accessed by using square brackets and can be initialized by using nested Python Lists.

Creating a Numpy Array

Arrays in Numpy can be created by multiple ways, with various number of Ranks, defining the size of the Array. Arrays can also be created with the use of various data types such as lists, tuples, etc. The type of the resultant array is deduced from the type of the elements in the sequences.

Note: Type of array can be explicitly defined while creating the array.

CODE:

```
import numpy as np

a=int(input("Enter size of array: "))

print("Number are: ")

m = []

for i in range (a) :
```

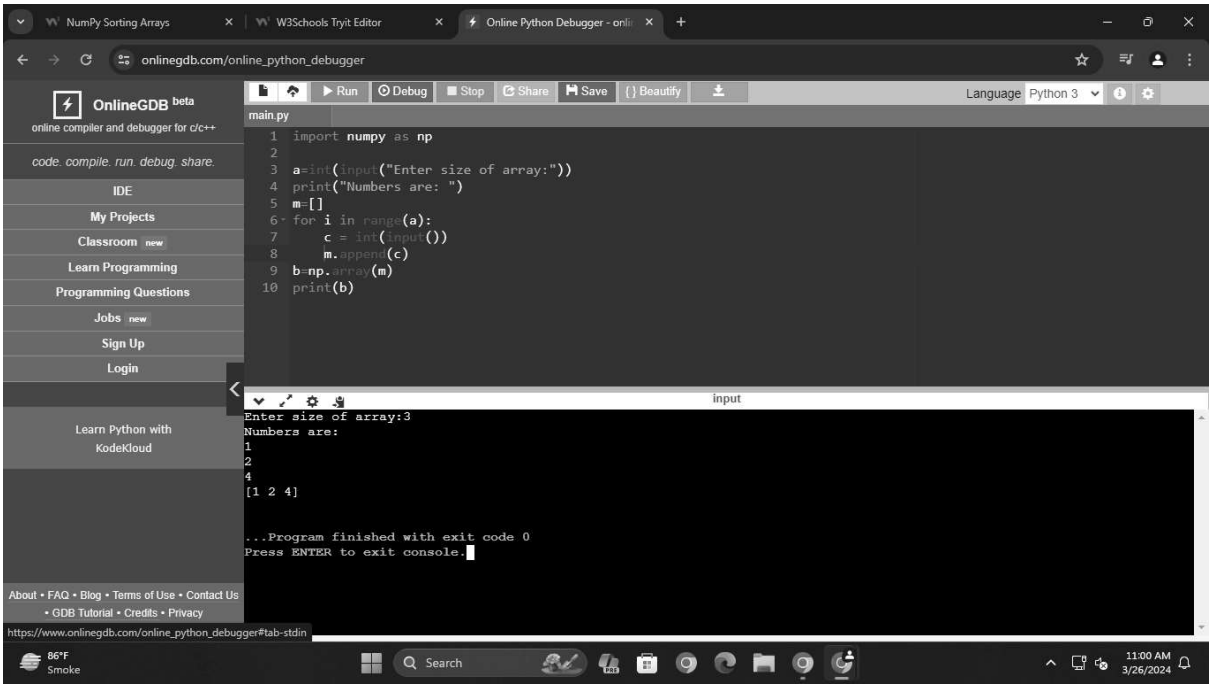
```
c = int (input() )

m.append(m)

b = np.array(m)

print (b)
```

RESULT:



Conclusion: In conclusion, the study of the NumPy package has provided invaluable insights into efficient array manipulation and computation. Its robust functionality has enabled seamless implementation of arrays, facilitating complex mathematical operations and data manipulation tasks. By leveraging NumPy's optimized routines, researchers and developers can significantly enhance their productivity and performance in numerical computing tasks. Its extensive documentation and community support further contribute to its prominence in the scientific computing domain. Overall, NumPy stands as a cornerstone in Python's ecosystem for numerical computing, empowering users with a versatile toolset for array manipulation and mathematical operations.