**NUMPY**

**Objective:** N-diamentional array using Numpy in python

**LABWORK:**

**1.**import numpy as np

a=np.array([1,4,5,8],float)

print(a)

**OUTPUT**

[ 1. 4. 5. 8.]

**2.**a=np.arange(6)

print(a)

**OUTPUT**

[0 1 2 3 4 5]

**3.**b=np.arange(12).reshape(4,3)

print(b)

**OUTPUT**

[[ 0 1 2]

[ 3 4 5]

[ 6 7 8]

[ 9 10 11]]

**4.**c=np.arange(24).reshape(2,3,4)

print(c)

**OUTPUT**

[[12 13 14 15]

[16 17 18 19]

[20 21 22 23]]]

**5.**d=np.arange(0,2,0.3)

print(d)

**OUTPUT**

[ 0. 0.3 0.6 0.9 1.2 1.5 1.8]

**6.**e=np.ones((2,3),float)

print(e)

**OUTPUT**

[[ 1. 1. 1.]

[ 1. 1. 1.]]

**7.**f=np.zeros((2,4),int)

print(f)

**OUTPUT**

[[0 0 0 0]

[0 0 0 0]]

**8.** arr=np.array([[1,2,3],[4,5,6]])

print("Array is of type : ",type(arr))

print("no of dimensions : ",arr.ndim)

print("shape of array : ",arr.shape)

print("size of array : ",arr.size)

**OUTPUT**

('Array is of type : ', <type 'numpy.ndarray'>)

('no of dimensions : ', 2)

('shape of array : ', (2, 3))

('size of array : ', 6)

**9.** import numpy as np

d2=np.array([[0,1,2,3],[4,5,6,7],[8,9,10,11]])

print(d2[0:2,0:3])

**OUTPUT**

[[0 1 2]

[4 5 6]]

**10.** a=np.array([1,4,5],int)

for x in a:

print(x)

**OUTPUT**

1

4

5

**11.** a=np.array([[1,2],[3,4],[5,6]],float)

for (x,y) in a:

print(x\*y)

**OUTPUT**

2.0

12.0

30.0

**TASK**

**Object 01:** Multiply a 5 x 3 matrix by a 3 x 2 matrix

**Source Code:**

import numpy as np

arr1=np.array(([1,2,3],[2,2,5],[2,2,5],[2,2,5],[2,2,5]))

arr2=np.array(([1,2],[2,2],[2,5]))

result = np.dot(arr1,arr2)

print("Dot product of two arrays:")

print(result)

**Output:**

Dot product of two arrays:

[[11 21]

[16 33]

[16 33]

[16 33]

[16 33]]

**Object 02:** Write a python progrom to create a 2D array with reshape (5,5) and filled by 1.

**Source Code:**

import numpy as np

a=np.arange(25).reshape(5,5)

print(a)

a=np.ones((5,5),int)

print(a)

**Output:**

[[ 0 1 2 3 4]

[ 5 6 7 8 9]

[10 11 12 13 14]

[15 16 17 18 19]

[20 21 22 23 24]]

[[1 1 1 1 1]

[1 1 1 1 1]

[1 1 1 1 1]

[1 1 1 1 1]

[1 1 1 1 1]]

**Object 03:** Let x be an array [1,2,3] and y be an [4,5,6]. Convert it to [[1,4],[2,5],[3,6]]

**Source Code:**

x=np.array([1,2,3])

y=np.array([4,5,6])

z=np.array([x,y]).reshape(3,2)

print(z)

**Output:**

[[1 2]

[3 4]

[5 6]]

**Object 04**: Let x be an array [1,2,3,4…….9]. split x into 3 arrays, each of which has 4,2,3 elements in the original order.

**Source Code:**

import numpy as np

x=np.array([1,2,3,4,5,6,7,8,9])

print("Three new arrays:")

b=np.array(x[0:4])

print(b)

c=np.array(x[4:6])

print(c)

d=np.array(x[6:9])

print(d)

**Output:**

Three new arrays:

[1 2 3 4]

[5 6]

[7 8 9]