Lab 9

Name : Shashank Bagda **Date : 03 / 08 / 22**

Enrollment No : 92100133020

```
# LAB 9
# Shashank Bagda - 92100133020

print("\n")
n = np.ones((3,3))
print(n)
print("\n")

d = np.eye(10)
print(d)
print("\n")

e = np.random.random((2,2))
print(e)
print("\n")

t = np.random.randint(100,size=(5,5))
print(t)
print("\n")
```

```
[[1. 1. 1.]
 [1. 1. 1.]
 [1. 1. 1.]]


[[1. 0. 0. 0. 0. 0. 0. 0. 0. 0.]
 [0. 1. 0. 0. 0. 0. 0. 0. 0. 0.]
 [0. 0. 1. 0. 0. 0. 0. 0. 0. 0.]
 [0. 0. 0. 1. 0. 0. 0. 0. 0. 0.]
 [0. 0. 0. 0. 1. 0. 0. 0. 0. 0.]
 [0. 0. 0. 0. 0. 1. 0. 0. 0. 0.]
 [0. 0. 0. 0. 0. 0. 1. 0. 0. 0.]
 [0. 0. 0. 0. 0. 0. 0. 1. 0. 0.]
 [0. 0. 0. 0. 0. 0. 0. 0. 1. 0.]
 [0. 0. 0. 0. 0. 0. 0. 0. 0. 1.]]


[[0.16061951 0.54319324]
 [0.54722934 0.63105593]]


[[17 22 58 19 95]
 [92 33 56 22 90]
 [52 52 56 66 22]
 [44 75 35 19 26]
 [31 53 67 54 38]]
```

```
a = np.array([1,2,3])
print(type(a))
print("\n")
print(a.shape)
print("\n")
print(a[0],a[1],a[2])
print("\n")
a[0] = 5
print(a)
print("\n")

b = np.array([[1,2,3],[4,5,6]])
print(b.shape)
print("\n")
print(b[0,0],b[0,1],b[1,0])
print("\n")

v = np.array([[1,2,3,4],[5,6,7,8],[9,10,11,12]])
print(v)
```

```
<class 'numpy.ndarray'>


(3,)


1 2 3


[5 2 3]


(2, 3)


1 2 4


[[ 1  2  3  4]
 [ 5  6  7  8]
 [ 9 10 11 12]]
```

```
v = np.array([[1,2,3,4],[5,6,7,8],[9,10,11,12]])
print(v)
print("\n")
b = v[:2,1:3]
print("matrix : \n",b)
print("\n")

print(v[0,1])
print("\n")
b[0,0] = 77
print(v[0,1])
print("\n")
```

```
matrix :
 [[2 3]
 [6 7]]


2



77
```

```
row_r1 = v[1, :]
row_r2 = v[1:2, :]

print(row_r1, row_r1.shape)
print("\n")
print(row_r2, row_r2.shape)
print("\n")

col_r1 = v[: , 1]
col_r2 = v[: , 1:2]

print(col_r1, col_r1.shape)
print("\n")
print(col_r2, col_r2.shape)
print("\n")
```

```
[5 6 7 8] (4,)


[[5 6 7 8]] (1, 4)


[77  6 10] (3,)


[[77]
 [ 6]
 [10]] (3, 1)
```

```
# DATATYPES

x = np.array([1,2])
print(x.dtype)
print("\n")

x = np.array([1.0,2.0])
print(x.dtype)
print("\n")
```

```
int32


float64
```

```
# ARRAY MATH

x = np.array([[1,2],[3,4]], dtype=np.float64)
y = np.array([[5,6],[7,8]], dtype=np.float64)

print(x+y)
print(np.add(x,y))
print("\n")

print(x-y)
print(np.subtract(x,y))
print("\n")

print(x*y)
print(np.multiply(x,y))
print("\n")

print(x/y)
print(np.divide(x,y))
print("\n")
```

```
[[ 6.  8.]
 [10. 12.]]
[[ 6.  8.]
 [10. 12.]]


[[-4. -4.]
 [-4. -4.]]
[[-4. -4.]
 [-4. -4.]]


[[ 5. 12.]
 [21. 32.]]
[[ 5. 12.]
 [21. 32.]]


[[0.2        0.33333333]
 [0.42857143 0.5       ]]
[[0.2        0.33333333]
 [0.42857143 0.5       ]]
```

```
print(np.sqrt(x))
print("\n")

v = np.array([9,10])
w = np.array([11,12])

print(v.dot(w))
print(np.dot(v,w))
```

```
[[1.         1.41421356]
 [1.73205081 2.        ]]


219
219
```