

Lab 10

Name :- Aryan Dilipbhai Langhanoja

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Enrollment No :- 92200133030

CO1: To write, test, and debug simple Python programs

CO2: To implement Python programs with conditional, loops and functions

Task 1:- Implementing the ndim functions

Python Code:

```
a = np.array(0)
b = np.array([1,2,3])
c = np.array([[1,2,3],[4,5,6]])
d = np.array([[[1,2,3],[4,5,6]],[[1,2,3],[4,5,6]]])
e = np.array([[[[1,2],[3,4],[5,6]],[[1,2],[3,4],[5,6]]],[[1,2],[3,4],[5,6]],[[1,2],[3,4],[5,6]]]])
print(d)
print(e)
print(a.ndim)
print(b.ndim)
print(c.ndim)
print(d.ndim)
print(e.ndim)
print("\n")
```

Output:

```
PS C:\Users\abc> & D:/python.exe "d:/Aryan/Semester - 3/Programming With Python/Lab Manual/Lab- 10/14-08-2023 LAB-10.py"
0
1
2
3
4
```

Task 2:- Implementing the itemsize function

Python Code:

```
d = np.array([[[1,2,3],[4,5,6]],[[1,2,3],[4,5,6]]])
print(d.itemsize)
```

Output:

```
PS C:\Users\abc> & D:/python.exe "d:/Aryan/Semester - 3/Programming With Python/Lab Manual/Lab- 10/14-08-2023 LAB-10.py"
4
```

Task 3:- Implementing the dtype function**Python Code:**

```
a = np.array([[1,2.0],[3,4]])  
print(a.dtype)  
a = np.array([[1,2],[3,4+3j]])  
print(a.dtype)
```

Output:

```
PS C:\Users\abc> & D:/python.exe "d:/Aryan/Semester - 3/Programming With  
float64  
complex128
```

Task 4:- Implementing Mean Functions**Python Code:**

```
a = np.array([[1,2],[3,4]])  
b = np.mean(a,axis=0)  
c = np.mean(a,axis=1)  
print(a)  
print(b)  
print(c)
```

Output:

```
PS C:\Users\abc> & D:/python.exe "d:/Aryan/Semester - 3/Programming With Python/  
[[1 2]  
 [3 4]]  
[2. 3.]  
[1.5 3.5]
```

Task 5:- Implementing Append Function**Python Code:**

```
a = np.array([[1,2],[3,4]])  
b = np.array([[7,6],[8,9]])  
c = np.append(a, b)  
print(c)
```

Output:

```
PS C:\Users\abc> & D:/python.exe "d:/Aryan/Semester - 3/Programming W  
[1 2 3 4 7 6 8 9]
```

Task 6:- Implement Insert Function**Python Code:**

```
a = np.array([[1,2],[3,4],[5,6]])  
print(np.insert(a, 2,[5,9],axis= 0))
```

Output :

```
PS C:\Users\abc> & D:/python.exe "d:/Aryan/Semester
[[1 2]
 [3 4]
 [5 9]
 [5 6]]
```

Task 7:- Arethematic Operation On Matrix

Python Code:

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

Output:

```
PS C:\Users\abc> & D:/python.exe "d:/Aryan/Semester - 3/Programming
"
[[ 6.  8.]
 [10. 12.]]
[[ 6.  8.]
 [10. 12.]]

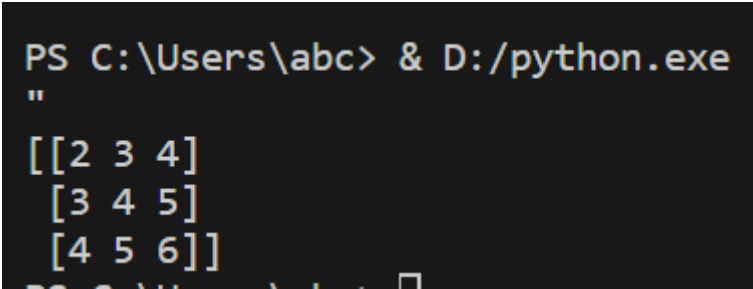
[[-4. -4.]
 [-4. -4.]
 [-4. -4.]
 [-4. -4.]]

[[ 5. 12.]
 [21. 32.]]
[[ 5. 12.]
 [21. 32.]]
[[19. 22.]
 [43. 50.]]

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

Task 9:- Addition Of A Matrix**Python Code:**

```
arr1 = np.array([1,2,3])  
arr2 = np.array([[1],[2],[3]])  
sum = arr1 + arr2  
print(sum)
```

Output:

```
PS C:\Users\abc> & D:/python.exe  
"  
[[2 3 4]  
 [3 4 5]  
 [4 5 6]]
```