
***ML Lab Assignment -1***

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**Submitted to:-**

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# 1. Numpy creating arrays

```
import numpy as np
a=np.array([1,2,3,4])
print(type(a))                o/p-: <class numpy.array>
```

# 2.Numpy Indexing

```
import numpy as np
a=np.array([1,2,3,4])
print(a[2])       o/p:- 3           #print 2nd index
print(a[1:3])     o/p:-[2,3]        #4 is not included in output
print(a[5])       o/p:- error       #index out of bound error
print(a[-1])      o/p:- 4           #print last number
```

# 3.Numpy Slicing

```
import numpy as np
arr = np.array([1, 2, 3, 4, 5, 6, 7])
print(arr[1:5:2])                          #print index with difference of 2
print(arr[-4:-1])                          #negative slicing
print(arr[::-1])                           #reverse array
```

```
o/p:- [2 4]
      [4 5 6]
      [7 6 5 4 3 2 1]
```

# 4.Numpy DataTypes

```
import numpy as np

#arr = np.array([1, 2, 3, 4])      print int 64
#arr=np.array([1.5,2.4])           print float 64
#arr=np.array(["raman","sakshi"])  print u6
print(arr.dtype)
```

```
o/p:- <U6
```

# 5 . Copy

```
import numpy as np
arr = np.array([1, 2, 3, 4, 5])
x = arr.copy()
arr[0] = 42
print(arr)

print(x)
```

o/p:-

```
[42  2  3  4  5]
[1 2 3 4 5]
```

# 6.View

```
import numpy as np
arr = np.array([1, 2, 3, 4, 5])
x = arr.view()
arr[0] = 42
print(arr)
print(x)
```

o/p:-

```
[42  2  3  4  5]
[1 2 3 4 5]
```

# 7.Shape

```
import numpy as np
my_list=[[2,3,4] , [5,6,7], [8,9,10], [11,12,13]]
a=np.array(my_list)
print(a)
print(a.shape)                #print shape according to row column
```

o/p:-
```
[[ 2  3  4]
 [ 5  6  7]
 [ 8  9 10]
 [11 12 13]]
(4, 3)
```

# 8.Reshape

```
import numpy as np
arr = np.array([1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12])
newarr = arr.reshape(4, 3)
print(newarr)
```

o/p:-
```
[[ 1  2  3]
 [ 4  5  6]
 [ 7  8  9]
 [10 11 12]]
```

# 9.Iterative method

```
import numpy as np
arr = np.array([1, 2, 3])
for x in arr:
  print(x)        #print array as a loop line by line
```

o/p:- 1

2

3

# 10.Join Method

```
import numpy as np
a = np.array([1, 2, 3])
b = np.array([4, 5, 6])
c = np.concatenate((a,b))
print(c)                              #join two arrays
```

o/p:- [1 2 3 4 5 6]

# 11.Split Method

```
import numpy as np
arr = np.array([1, 2, 3, 4, 5, 6])
newarr = np.array_split(arr, 3)
print(newarr)                                  #split array in 3parts
```

o/p:- [array([1, 2]), array([3, 4]), array([5, 6])]

# 12.Search Method

```
import numpy as np
arr = np.array([1, 2, 3, 4, 5, 4, 4])
x = np.where(arr == 4)
print(x)                                       #print index where 4 present
```

o/p:- (array([3, 5, 6]),)

# 13.Sort Method

```
import numpy as np
arr = np.array([3, 2, 0, 1])
print(np.sort(arr))                            #sort array
```

o/p:- [0 1 2 3]

# 14.Filter Method

```
import numpy as np
arr = np.array([41, 42, 43, 44])
x = [True, True, True, False]
newarr = arr[x]
print(newarr)                                   #print only where array had true
```

o/p:- `[41 42 43]`