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Lab2

How to create 1D Array in Python using Numpy

```
import numpy as np
x = np.array([1,2,3,4,5, 'MITWPU'])
print(x)
type(x)

['1' '2' '3' '4' '5' 'MITWPU']
numpy.ndarray

y = np.arange(10,50)
print(y)
type(y)

[10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33
 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49]
numpy.ndarray
```

```
d=np.array((9,8,10))
print(d)
type(d)
```

```
[ 9  8 10]
numpy.ndarray
```

```
import pandas as pd
s=np.random.rand(10)
print(s)

[0.16045602 0.50885581 0.21845746 0.17239557 0.54159047 0.44398457
 0.86725736 0.30840584 0.93618717 0.82473786]
```

```
newArr = np.random.randint(1,100,(4,8))
print(newArr)
```

```
[[74 79 76 36 97 34 21 38]
 [14 11 10 57 45 32 71 30]
 [87  1 78 24 65  9 16 95]
 [ 2 11 18 76 15 44 58 43]]
```

```
a,b,c = np.random.rand(3,3,3)
print('a=',a ,'\n', 'b=',b,'\n', 'c=',c)

a= [[0.87193075 0.38173051 0.57609516]
 [0.98107375 0.14512748 0.57623214]
 [0.18959193 0.71518162 0.76171168]]
b= [[0.03273587 0.32858465 0.98521989]
 [0.63653193 0.65825087 0.45657303]
 [0.49686724 0.51512282 0.19857169]]
c= [[0.77581846 0.12101208 0.1238914 ]
 [0.22344612 0.47053527 0.87583249]
 [0.61879544 0.06346722 0.65112714]]
```

vstack and hstack on 3 by 3 matrix

```
import numpy as np
z=np.hstack((a,b))
print(z)

[[0.87193075 0.38173051 0.57609516 0.03273587 0.32858465 0.98521989]
 [0.98107375 0.14512748 0.57623214 0.63653193 0.65825087 0.45657303]
 [0.18959193 0.71518162 0.76171168 0.49686724 0.51512282 0.19857169]]
```

```
z=np.vstack((a,b))
print(z)

[[0.87193075 0.38173051 0.57609516]
 [0.98107375 0.14512748 0.57623214]
 [0.18959193 0.71518162 0.76171168]
 [0.03273587 0.32858465 0.98521989]
 [0.63653193 0.65825087 0.45657303]
 [0.49686724 0.51512282 0.19857169]]
```

```
n=np.arange(10).reshape(2,-1)
print(n)
```

```
[[0 1 2 3 4]
 [5 6 7 8 9]]
```

```
p = np.repeat(1,10).reshape(2,-1)
print(p)
```

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

```
a=np.array([1,2,3,2,3,4,3,4,5,6])
b = np.array([7,2,10,2,7,4,9,4,9,8])
c= np.intersect1d(a,b)
print(c)
```

```
[2 4]
```

## Pandas

Creating Series from list,dictionary,numpy array

```
import pandas as pd
d ={'col1':[1,2],'col2':[3,4]}
df = pd.DataFrame(d)
df
```

	col1	col2
0	1	3
1	2	4

```
print(df.at[1,'col1'])
```

```
2
```

```
df = pd.DataFrame([[1,2,3],[0,4,1],[10,20,30],[21,23,44]] , index=[4,5,6,7], columns=['A','B','C'])
df
```

	A	B	C
4	1	2	3
5	0	4	1
6	10	20	30
7	21	23	44

```
import pandas as pd
import numpy as np
lst = [12,22,13,34]
dct = {0:'A',1:'B',2:'C',3:'D'}
array = np.array([6,7,8,9])
g= pd.Series(lst)
h= pd.Series(dct)
i= pd.Series(array)
l = pd.DataFrame({'g':g,'i':i,'h':h})
print(l)
print('\t')
print(g)
print(h)
print(i)
```

	g	i	h
0	12	6	A
1	22	7	B
2	13	8	C
3	34	9	D

```
0    12
1    22
2    13
3    34
dtype: int64
0     A
1     B
```

```
2    C
3    D
dtype: object
0     6
1     7
2     8
3     9
dtype: int64
```