In [1]:

```
import numpy as np
```

In [2]:

```
np.random.rand(1,30)
```

Out[2]:

```
array([[ 0.81281121,  0.2397257 ,  0.06264346,  0.71194874,  0.15036373,
         0.42112183,  0.47524667,  0.00302585,  0.7590526 ,  0.42987343,
         0.37910578,  0.82249466,  0.68506961,  0.56156163,  0.53974614,
         0.67543283,  0.79741554,  0.04520701,  0.33777323,  0.96891581,
         0.39539779,  0.31062647,  0.30175925,  0.69666277,  0.53586802,
         0.02778587,  0.46727117,  0.9538409 ,  0.19120507,  0.5904591 ]])
```

In [3]:

```
import random from numpy
```

```
  File "<ipython-input-3-9fc11c7e777d>", line 1
    import random from numpy
                     ^
SyntaxError: invalid syntax
```

In [7]:

```
from numpy.random import randint
```

In [11]:

```
x=randint (1,30,30)
```

In [12]:

```
x
```

Out[12]:

```
array([28,  4,  7, 16,  2,  7, 29,  1, 15,  4, 11, 19,  8, 21, 26, 20, 12,
        9, 14, 24, 21,  6, 16, 16, 20, 24, 19, 28,  8,  7])
```

In [13]:

```
x.shape
```

Out[13]:

```
(30,)
```

In [25]:

```
x=x.reshape(6,5)
```

In [26]:

```
x
```

Out[26]:

```
array([[28,  4,  7, 16,  2],
       [ 7, 29,  1, 15,  4],
       [11, 19,  8, 21, 26],
       [20, 12,  9, 14, 24],
       [21,  6, 16, 16, 20],
       [24, 19, 28,  8,  7]])
```

In [28]:

```
y=x[2:4,1:4]
```

In [30]:

```
y
```

Out[30]:

```
array([[19,  8, 21],
       [12,  9, 14]])
```

In [31]:

```
x
```

Out[31]:

```
array([[28,  4,  7, 16,  2],
       [ 7, 29,  1, 15,  4],
       [11, 19,  8, 21, 26],
       [20, 12,  9, 14, 24],
       [21,  6, 16, 16, 20],
       [24, 19, 28,  8,  7]])
```

In [32]:

```
z=x>10
```

In [33]:

```
z
```

Out[33]:

```
array([[ True, False, False,  True, False],
       [False,  True, False,  True, False],
       [ True,  True, False,  True,  True],
       [ True,  True, False,  True,  True],
       [ True, False,  True,  True,  True],
       [ True,  True,  True, False, False]], dtype=bool)
```

In [37]:

```
x
```

Out[37]:

```
array([[28,  4,  7, 16,  2],
       [ 7, 29,  1, 15,  4],
       [11, 19,  8, 21, 26],
       [20, 12,  9, 14, 24],
       [21,  6, 16, 16, 20],
       [24, 19, 28,  8,  7]])
```

In [41]:

```
len(x)
```

Out[41]:

```
6
```

In [42]:

```
arr = np.arange(0,11)
```

In [43]:

```
arr
```

Out[43]:

```
array([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10])
```

In [45]:

```
0/arr
```

```
C:\Users\Rutanshu Desai\Anaconda3\lib\site-packages\ipykernel\__main__.py:
1: RuntimeWarning: invalid value encountered in true_divide
  if __name__ == '__main__':
```

Out[45]:

```
array([ nan,   0.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,   0.])
```

In [46]:

```
np.arange(10,51,2)
```

Out[46]:

```
array([10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42,
       44, 46, 48, 50])
```

In [47]:

```
np.arange(0,9).reshape(3,3)
```

Out[47]:

```
array([[0, 1, 2],
       [3, 4, 5],
       [6, 7, 8]])
```

In [1]:

```
import pandas as pd
```

In [2]:

```
a=[1,2,3]
```

In [3]:

```
l=['a','b','c']
```

In [13]:

```
pd.Series(a,l)
```

Out[13]:

```
a    1
b    2
c    3
dtype: int64
```

In [15]:

```
import numpy as np
```

In [16]:

```
arr = np.array(a)
```

In [17]:

```
arr
```

Out[17]:

```
array([1, 2, 3])
```

In [18]:

```
a
```

Out[18]:

```
[1, 2, 3]
```

In [19]:

```
b=['a',1]
```

In [20]:

```
b
```

Out[20]:

```
['a', 1]
```

In [21]:

```
z=np.array(b)
```

In [22]:

```
z
```

Out[22]:

```
array(['a', '1'],
      dtype='<U1')
```

In [23]:

```
arr
```

Out[23]:

```
array([1, 2, 3])
```

In [27]:

```
x=['Rutanshu','Heena','Shubham','Karan']
```

In [28]:

```
x
```

Out[28]:

```
['Rutanshu', 'Heena', 'Shubham', 'Karan']
```

In [29]:

```
x=np.array(x)
```

In [30]:

```
x
```

Out[30]:

```
array(['Rutanshu', 'Heena', 'Shubham', 'Karan'],
      dtype='<U8')
```

In [46]:

```
y=['90','98','65','78']
```

In [47]:

```
y=np.array(y)
```

In [48]:

```
y
```

Out[48]:

```
array(['90', '98', '65', '78'],
      dtype='<U2')
```

In [59]:

```
z=pd.Series(y,x)
```

In [60]:

```
z
```

Out[60]:

```
Rutanshu    90
Heena       98
Shubham     65
Karan       78
dtype: object
```

In [57]:

```
z=['Rutanshu']
```

In [61]:

```
z
```

Out[61]:

```
Rutanshu    90
Heena       98
Shubham     65
Karan       78
dtype: object
```

In [62]:

```
z['Rutanshu']
```

Out[62]:

```
'90'
```

In [63]:

```
z
```

Out[63]:

```
Rutanshu    90
Heena       98
Shubham     65
Karan       78
dtype: object
```

In [67]:

```
z['Karan']
```

Out[67]:

```
'78'
```

In [69]:

```
pd.Series([1,2,3],['a','b','c'])
```

Out[69]:

```
a    1
b    2
c    3
dtype: int64
```

In [83]:

```
z=pd. DataFrame(np.random.rand(3,3),'Rutanshu Heena Karan'.split(),'x y z'.split())
```

In [84]:

```
z
```

Out[84]:

	x	y	z
Rutanshu	0.449647	0.235224	0.906918
Heena	0.343110	0.028906	0.073990
Karan	0.172928	0.880834	0.852781

In [74]:

```
z['Rutanshu']
```

Out[74]:

```
70
```

In [85]:

```
d= pd.DataFrame(np.random.rand(3,3),['Maths','Science','English'],['Rut','Karan','Heen
a'])
```

In [86]:

```
d
```

Out[86]:

	Rut	Karan	Heena
Maths	0.607398	0.330748	0.429350
Science	0.831356	0.755811	0.825285
English	0.299190	0.673834	0.953940

In [88]:

```
points=pd.DataFrame(np.random.rand(4,4),'India Australia Pakistan
West_Indies'.split(),'P W L Points'.split())
```

In [89]:

```
points
```

Out[89]:

	P	W	L	Points
India	0.144061	0.633331	0.050214	0.461035
Australia	0.095120	0.924519	0.165656	0.287074
Pakistan	0.781768	0.684987	0.937223	0.311360
West_Indies	0.414638	0.367861	0.120544	0.403726

In [98]:

```
points['P Points'.split()]
```

Out[98]:

	P	Points
India	0.144061	0.461035
Australia	0.095120	0.287074
Pakistan	0.781768	0.311360
West_Indies	0.414638	0.403726

In [99]:

```
z
```

Out[99]:

	x	y	z
Rutanshu	0.449647	0.235224	0.906918
Heena	0.343110	0.028906	0.073990
Karan	0.172928	0.880834	0.852781

In [106]:

```
z.drop('x',axis=1,inplace=True)
```

In [107]:

```
x
```

Out[107]:

```
array(['Rutanshu', 'Heena', 'Shubham', 'Karan'],
      dtype='<U8')
```

In [108]:

```
z
```

Out[108]:

	y	z
Rutanshu	0.235224	0.906918
Heena	0.028906	0.073990
Karan	0.880834	0.852781

In [111]:

```
z.drop('Karan',inplace=True)
```

In [112]:

```
z
```

Out[112]:

	y	z
Rutanshu	0.235224	0.906918
Heena	0.028906	0.073990

In [113]:

```
points
```

Out[113]:

	P	W	L	Points
India	0.144061	0.633331	0.050214	0.461035
Australia	0.095120	0.924519	0.165656	0.287074
Pakistan	0.781768	0.684987	0.937223	0.311360
West_Indies	0.414638	0.367861	0.120544	0.403726

In [116]:

```
points.loc['India','P']
```

Out[116]:

```
0.1440610457675976
```

In [120]:

```
points.loc['India','Points']
```

Out[120]:

```
0.46103549225677032
```

In [121]:

```
z
```

Out[121]:

	y	z
Rutanshu	0.235224	0.906918
Heena	0.028906	0.073990

In [128]:

```
z.loc['Heena']
```

Out[128]:

```
y    0.028906
z    0.073990
Name: Heena, dtype: float64
```

In [129]:

```
points
```

Out[129]:

	P	W	L	Points
India	0.144061	0.633331	0.050214	0.461035
Australia	0.095120	0.924519	0.165656	0.287074
Pakistan	0.781768	0.684987	0.937223	0.311360
West_Indies	0.414638	0.367861	0.120544	0.403726

In [132]:

```
points.loc[['India','Pakistan'],['P','Points']]
```

Out[132]:

	P	Points
India	0.144061	0.461035
Pakistan	0.781768	0.311360

In [8]:

```
x=pd.Series([1,2,3],['a','b','c'])
```

In [5]:

```
import pandas as pd
```

In [ ]:

```

```

In [9]:

```
x
```

Out[9]:

```
a    1
b    2
c    3
dtype: int64
```

In [10]:

```
import numpy as np
```

In [11]:

```
y=pd.DataFrame(np.random.rand(3,3),['r1','r2','r3'],['c1','c2','c3'])
```

In [12]:

```
y
```

Out[12]:

	c1	c2	c3
r1	0.369921	0.405161	0.165639
r2	0.917178	0.459174	0.826614
r3	0.044381	0.487155	0.897790

In [25]:

```
y[['c1' ,'c2', 'c3']]
```

Out[25]:

	c1	c2	c3
r1	0.369921	0.405161	0.165639
r2	0.917178	0.459174	0.826614
r3	0.044381	0.487155	0.897790

In [28]:

```
y.loc['r1 r3'.split()]
```

Out[28]:

	c1	c2	c3
r1	0.369921	0.405161	0.165639
r3	0.044381	0.487155	0.897790

In [29]:

```
y
```

Out[29]:

	c1	c2	c3
r1	0.369921	0.405161	0.165639
r2	0.917178	0.459174	0.826614
r3	0.044381	0.487155	0.897790

In [30]:

```
y.loc[['r1','r3'],['c1','c2']]
```

Out[30]:

	c1	c2
r1	0.369921	0.405161
r3	0.044381	0.487155

In [31]:

```
y
```

Out[31]:

	c1	c2	c3
r1	0.369921	0.405161	0.165639
r2	0.917178	0.459174	0.826614
r3	0.044381	0.487155	0.897790

In [36]:

```
x=y[y>0.5]['c3']
```

In [33]:

```
x
```

Out[33]:

	c1	c2	c3
r1	NaN	NaN	NaN
r2	0.917178	NaN	0.826614
r3	NaN	NaN	0.897790

In [39]:

```
y[y>0.5]['c3']
```

Out[39]:

```
r1         NaN
r2    0.826614
r3    0.897790
Name: c3, dtype: float64
```

In [38]:

```
x
```

Out[38]:

```
r1         NaN
r2    0.826614
r3    0.897790
Name: c3, dtype: float64
```

In [44]:

```
z=pd.DataFrame(np.random.rand(5,5),['R1','R2','R3','R4','R5'],
['C1','C2','C3','C4','C5'])
```

In [46]:

```
z
```

Out[46]:

	C1	C2	C3	C4	C5
R1	0.220452	0.251384	0.480189	0.138022	0.599365
R2	0.966648	0.694482	0.849137	0.514044	0.986710
R3	0.125268	0.333992	0.615854	0.971583	0.150316
R4	0.573038	0.998836	0.461605	0.192233	0.326343
R5	0.417493	0.216326	0.227576	0.873046	0.943546

In [54]:

```
z[z['C1']>0.5]['C1']
```

Out[54]:

```
R2    0.966648
R4    0.573038
Name: C1, dtype: float64
```

In [ ]:

```

```

In [55]:

```
z
```

Out[55]:

	C1	C2	C3	C4	C5
R1	0.220452	0.251384	0.480189	0.138022	0.599365
R2	0.966648	0.694482	0.849137	0.514044	0.986710
R3	0.125268	0.333992	0.615854	0.971583	0.150316
R4	0.573038	0.998836	0.461605	0.192233	0.326343
R5	0.417493	0.216326	0.227576	0.873046	0.943546

In [56]:

```
r=z[z['C4']<0.5]['C4']
```

In [57]:

```
r
```

Out[57]:

```
R1    0.138022
R4    0.192233
Name: C4, dtype: float64
```

In [58]:

```
z['C4']<0.5
```

Out[58]:

```
R1     True
R2    False
R3    False
R4     True
R5    False
Name: C4, dtype: bool
```

In [59]:

```
s=z[z>0.5] & [ ]
```

In [60]:

```
s
```

Out[60]:

	C1	C2	C3	C4	C5
R1	NaN	NaN	NaN	NaN	0.599365
R2	0.966648	0.694482	0.849137	0.514044	0.986710
R3	NaN	NaN	0.615854	0.971583	NaN
R4	0.573038	0.998836	NaN	NaN	NaN
R5	NaN	NaN	NaN	0.873046	0.943546

In [61]:

```
z
```

Out[61]:

	C1	C2	C3	C4	C5
R1	0.220452	0.251384	0.480189	0.138022	0.599365
R2	0.966648	0.694482	0.849137	0.514044	0.986710
R3	0.125268	0.333992	0.615854	0.971583	0.150316
R4	0.573038	0.998836	0.461605	0.192233	0.326343
R5	0.417493	0.216326	0.227576	0.873046	0.943546

In [62]:

```
z.reset_index()
```

Out[62]:

	index	C1	C2	C3	C4	C5
0	R1	0.220452	0.251384	0.480189	0.138022	0.599365
1	R2	0.966648	0.694482	0.849137	0.514044	0.986710
2	R3	0.125268	0.333992	0.615854	0.971583	0.150316
3	R4	0.573038	0.998836	0.461605	0.192233	0.326343
4	R5	0.417493	0.216326	0.227576	0.873046	0.943546

In [64]:

```
state= ['CA TX WY NY NC'.split()]
```

In [69]:

```
z.set_index(state, inplace=True)
```

In [71]:

```
z
```

Out[71]:

	C1	C2	C3	C4	C5
CA	0.220452	0.251384	0.480189	0.138022	0.599365
TX	0.966648	0.694482	0.849137	0.514044	0.986710
WY	0.125268	0.333992	0.615854	0.971583	0.150316
NY	0.573038	0.998836	0.461605	0.192233	0.326343
NC	0.417493	0.216326	0.227576	0.873046	0.943546

In [72]:

```
z
```

Out[72]:

	C1	C2	C3	C4	C5
CA	0.220452	0.251384	0.480189	0.138022	0.599365
TX	0.966648	0.694482	0.849137	0.514044	0.986710
WY	0.125268	0.333992	0.615854	0.971583	0.150316
NY	0.573038	0.998836	0.461605	0.192233	0.326343
NC	0.417493	0.216326	0.227576	0.873046	0.943546

In [1]:

```
import numpy as np
```

In [2]:

```
import pandas as pd
```

In [27]:

```
z=pd.DataFrame(np.random.rand(9).reshape(3,3)*100,['Rutanshu','Heena','Karan'],['Histor
y','Geography','Maths'])
```

In [8]:

```
z
```

Out[8]:

	History	Geography	Maths
Rutanshu	55.669462	65.083363	4.864581
Heena	13.778152	29.080582	92.236913
Karan	49.056110	94.456614	74.419339

In [12]:

```
x=pd.Series([12,15,19],['a','b','c'])
```

In [13]:

```
x
```

Out[13]:

```
a    12
b    15
c    19
dtype: int64
```

In [15]:

```
list = [1,2,3]
```

In [18]:

```
np.array(list)
```

Out[18]:

```
array([1, 2, 3])
```

In [21]:

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

In [22]:

```
s.shape
```

Out[22]:

```
(1, 3)
```

In [24]:

```
z=pd.DataFrame(s,['Rutanshu'],['History','Geography','Maths'])
```

In [25]:

```
z
```

Out[25]:

	History	Geography	Maths
Rutanshu	1	2	3

In [28]:

```
z
```

Out[28]:

	History	Geography	Maths
Rutanshu	8.341218	76.60617	34.255045
Heena	51.977966	19.19077	1.449494
Karan	55.814753	56.12741	78.609718

In [32]:

```
z.drop('Karan',inplace=True)
```

In [33]:

```
z
```

Out[33]:

	History	Geography	Maths
Rutanshu	8.341218	76.60617	34.255045
Heena	51.977966	19.19077	1.449494

In [34]:

```
z
```

Out[34]:

	History	Geography	Maths
Rutanshu	8.341218	76.60617	34.255045
Heena	51.977966	19.19077	1.449494

In [35]:

```
z.drop('History',axis=1,inplace=True)
```

In [36]:

```
z
```

Out[36]:

	Geography	Maths
Rutanshu	76.60617	34.255045
Heena	19.19077	1.449494

In [37]:

```
z
```

Out[37]:

	Geography	Maths
Rutanshu	76.60617	34.255045
Heena	19.19077	1.449494

In [38]:

```
z
```

Out[38]:

	Geography	Maths
Rutanshu	76.60617	34.255045
Heena	19.19077	1.449494

In [39]:

```
z['A']=z['Geography']+z['Maths']
```

In [40]:

```
z
```

Out[40]:

	Geography	Maths	A
Rutanshu	76.60617	34.255045	110.861215
Heena	19.19077	1.449494	20.640264

In [42]:

```
z['Geography']
```

Out[42]:

```
Rutanshu    76.60617
Heena       19.19077
Name: Geography, dtype: float64
```

In [43]:

```
z['A']
```

Out[43]:

```
Rutanshu    110.861215
Heena        20.640264
Name: A, dtype: float64
```

In [51]:

```
z
```

Out[51]:

	Geography	Maths	A
Rutanshu	76.60617	34.255045	110.861215
Heena	19.19077	1.449494	20.640264

In [55]:

```
z.loc[['Rutanshu'],['Geography','A']]
```

Out[55]:

	Geography	A
Rutanshu	76.60617	110.861215

In [56]:

```
z.loc['Rutanshu']
```

Out[56]:

```
Geography     76.606170
Maths         34.255045
A            110.861215
Name: Rutanshu, dtype: float64
```

In [57]:

```
z.loc['Heena']
```

Out[57]:

```
Geography    19.190770
Maths         1.449494
A            20.640264
Name: Heena, dtype: float64
```

In [60]:

```
a=z[z[]0]
```

```
  File "<ipython-input-60-3fe9662cf143>", line 1
    a=z[z[]0]
          ^
SyntaxError: invalid syntax
```

In [61]:

```
z
```

Out[61]:

	Geography	Maths	A
Rutanshu	76.60617	34.255045	110.861215
Heena	19.19077	1.449494	20.640264

In [72]:

```
z[z['A']<50][['A','Maths']]
```

Out[72]:

	A	Maths
Heena	20.640264	1.449494

In [73]:

```
points=pd.DataFrame(np.random.rand(4,4),'India Australia Pakistan
West_Indies'.split(),'P W L Points'.split())
```

In [74]:

```
points
```

Out[74]:

	P	W	L	Points
India	0.084774	0.124499	0.026374	0.836012
Australia	0.482796	0.236969	0.769871	0.956261
Pakistan	0.456510	0.836461	0.877085	0.427829
West_Indies	0.029037	0.302841	0.890738	0.305488

In [78]:

```
points[points['Points']>0.5][['P','Points']]
```

Out[78]:

	P	Points
India	0.084774	0.836012
Australia	0.482796	0.956261

In [79]:

```
z
```

Out[79]:

	Geography	Maths	A
Rutanshu	76.60617	34.255045	110.861215
Heena	19.19077	1.449494	20.640264

In [80]:

```
points
```

Out[80]:

	P	W	L	Points
India	0.084774	0.124499	0.026374	0.836012
Australia	0.482796	0.236969	0.769871	0.956261
Pakistan	0.456510	0.836461	0.877085	0.427829
West_Indies	0.029037	0.302841	0.890738	0.305488

In [87]:

```
z
```

Out[87]:

	Geography	Maths	A
Rutanshu	76.60617	34.255045	110.861215
Heena	19.19077	1.449494	20.640264

In [88]:

```
english=[10,20]
```

In [90]:

```
z['english'] = english
```

In [91]:

```
z
```

Out[91]:

	Geography	Maths	A	english
Rutanshu	76.60617	34.255045	110.861215	10
Heena	19.19077	1.449494	20.640264	20

In [92]:

```
  z
```

Out[92]:

	Geography	Maths	A	english
Rutanshu	76.60617	34.255045	110.861215	10
Heena	19.19077	1.449494	20.640264	20

In [93]:

```
z['SS']=[12,40]
```

In [94]:

```
z
```

Out[94]:

	Geography	Maths	A	english	SS
Rutanshu	76.60617	34.255045	110.861215	10	12
Heena	19.19077	1.449494	20.640264	20	40

In [95]:

```
points
```

Out[95]:

	P	W	L	Points
India	0.084774	0.124499	0.026374	0.836012
Australia	0.482796	0.236969	0.769871	0.956261
Pakistan	0.456510	0.836461	0.877085	0.427829
West_Indies	0.029037	0.302841	0.890738	0.305488

In [103]:

```
points.set_index ('new_index')
```

```
---------------------------------------------------------------------------
-
TypeError                                 Traceback (most recent call las
t)
<ipython-input-103-4a5ff5c7bfa6> in <module>()
----> 1 points.set_index ('new_index')

TypeError: 'list' object is not callable
```

In [100]:

```
new_index = ['UK','US','China','Russia']
```

In [104]:

```
points
```

Out[104]:

	P	W	L	Points
India	0.084774	0.124499	0.026374	0.836012
Australia	0.482796	0.236969	0.769871	0.956261
Pakistan	0.456510	0.836461	0.877085	0.427829
West_Indies	0.029037	0.302841	0.890738	0.305488

In [105]:

```
new_index
```

Out[105]:

```
['UK', 'US', 'China', 'Russia']
```

In [111]:

```
newindex = 'UK','US','China','Russia'
```

In [112]:

```
newindex
```

Out[112]:

```
('UK', 'US', 'China', 'Russia')
```

In [116]:

```
points['Country']= newindex
```

In [117]:

```
points
```

Out[117]:

	P	W	L	Points	Country
India	0.084774	0.124499	0.026374	0.836012	UK
Australia	0.482796	0.236969	0.769871	0.956261	US
Pakistan	0.456510	0.836461	0.877085	0.427829	China
West_Indies	0.029037	0.302841	0.890738	0.305488	Russia

In [122]:

```
z
```

Out[122]:

	Geography	Maths	A	english	SS
Rutanshu	76.60617	34.255045	110.861215	10	12
Heena	19.19077	1.449494	20.640264	20	40

In [125]:

```
new_index = ('r','sas')
```

In [130]:

```
new_index
```

Out[130]:

```
('r', 'sas')
```

In [133]:

```
z['Col'] = new_index
```

In [134]:

```
z
```

Out[134]:

	Geography	Maths	A	english	SS	Col
Rutanshu	76.60617	34.255045	110.861215	10	12	r
Heena	19.19077	1.449494	20.640264	20	40	sas

In [135]:

```
z.set_index('Col',inplace=True)
```

In [136]:

```
z
```

Out[136]:

	Geography	Maths	A	english	SS
Col					
r	76.60617	34.255045	110.861215	10	12
sas	19.19077	1.449494	20.640264	20	40

In [137]:

```
z
```

Out[137]:

	Geography	Maths	A	english	SS
Col					
r	76.60617	34.255045	110.861215	10	12
sas	19.19077	1.449494	20.640264	20	40

In [141]:

```
z.drop ('A',axis=1,inplace=True)
```

In [142]:

```
z
```

Out[142]:

	Geography	Maths	english
Col			
r	76.60617	34.255045	10
sas	19.19077	1.449494	20

In [143]:

```
new_index = ('A','B')
```

In [146]:

```
z['new'] = new_index
```

In [147]:

```
z
```

Out[147]:

	Geography	Maths	english	new
Col				
r	76.60617	34.255045	10	A
sas	19.19077	1.449494	20	B

In [149]:

```
z.set_index('new',inplace=True)
```

In [150]:

```
z
```

Out[150]:

	Geography	Maths	english
new			
A	76.60617	34.255045	10
B	19.19077	1.449494	20

In [2]:

```
import pandas as pd
import numpy as np
```

In [3]:

```
points=pd.DataFrame(np.random.rand(4,4),'India Australia Pakistan
West_Indies'.split(),'P W L Points'.split())
```

In [4]:

```
points
```

Out[4]:

	P	W	L	Points
India	0.224448	0.765790	0.301159	0.247218
Australia	0.757083	0.522729	0.367672	0.846055
Pakistan	0.571082	0.880667	0.840488	0.029260
West_Indies	0.265322	0.417866	0.454936	0.780599

In [8]:

```
points.loc['India']['L']
```

Out[8]:

```
0.30115934602567662
```

In [11]:

```
points.loc['India'] [['P','W']]
```

Out[11]:

```
P    0.224448
W    0.765790
Name: India, dtype: float64
```

In [12]:

```
df = pd.DataFrame({'A':[1,2,np.nan],
                  'B':[5,np.nan,np.nan],
                  'C':[1,2,3]})
```

In [13]:

```
df
```

Out[13]:

	A	**B**	**C**
0	1.0	5.0	1
1	2.0	NaN	2
2	NaN	NaN	3

In [16]:

```
df.dropna(axis=1, thresh = 2, inplace = True)
```

In [17]:

```
df
```

Out[17]:

	A	**C**
0	1.0	1
1	2.0	2
2	NaN	3

In [27]:

```
d={'Rutanshu':(1,2,np.nan),'Heena':(1,4,5)}
```

In [4]:

```
import pandas as pd
import numpy as np
```

In [28]:

```
r=pd.DataFrame(d)
```

In [10]:

```
r
```

Out[10]:

	Heena	Rutanshu
0	1	1.0
1	4	2.0
2	5	NaN

In [11]:

```
r.dropna()
```

Out[11]:

	Heena	Rutanshu
0	1	1.0
1	4	2.0

In [12]:

```
r
```

Out[12]:

	Heena	Rutanshu
0	1	1.0
1	4	2.0
2	5	NaN

In [14]:

```
r.dropna(axis=1)
```

Out[14]:

	Heena
0	1
1	4
2	5

In [15]:

```
r
```

Out[15]:

	Heena	Rutanshu
0	1	1.0
1	4	2.0
2	5	NaN

In [32]:

```
r=r.fillna(value=r['Rutanshu'].mean())
```

In [24]:

```
label=('GRE','TOEFL','GMAT')
```

In [25]:

```
r=label
```

In [33]:

```
r
```

Out[33]:

	Heena	Rutanshu
0	1	1.0
1	4	2.0
2	5	1.5

In [34]:

```
r['Subjects'] = label
```

In [35]:

```
r
```

Out[35]:

	Heena	Rutanshu	Subjects
0	1	1.0	GRE
1	4	2.0	TOEFL
2	5	1.5	GMAT

In [36]:

```
r.set_index('Subjects')
```

Out[36]:

	Heena	Rutanshu
Subjects		
GRE	1	1.0
TOEFL	4	2.0
GMAT	5	1.5

In [37]:

```
data = {'Company':['GOOG','GOOG','MSFT','MSFT','FB','FB'],
       'Person':['Sam','Charlie','Amy','Vanessa','Carl','Sarah'],
       'Sales':[200,120,340,124,243,350]}
```

In [39]:

```
df=pd.DataFrame(data)
```

In [50]:

```
df.groupby('Company').describe().transpose()
```

Out[50]:

Company	FB								GOOG	
	count	mean	std	min	25%	50%	75%	max	count	mean
Sales	2.0	296.5	75.660426	243.0	269.75	296.5	323.25	350.0	2.0	160.0

1 rows × 24 columns

In [58]:

```
scores = pd.DataFrame({'SrNo': [1,2,3],'Maths': [10,12,14],
           'Science': [12,12,13],
           'SS': [12,15,12]},
          index = ['Rutanshu','Heena','Karan'])
```

In [59]:

```
scores
```

Out[59]:

	Maths	SS	Science	SrNo
Rutanshu	10	12	12	1
Heena	12	15	12	2
Karan	14	12	13	3

In [64]:

```
contact = pd.DataFrame({'SrNo' : [1,2,3],'Mobile' : [54646,654646,54654]},index = ['Rutanshu','Heena','Karan'])
```

In [65]:

```
contact
```

Out[65]:

	Mobile	SrNo
Rutanshu	54646	1
Heena	654646	2
Karan	54654	3

In [68]:

```
pd.merge(scores,contact, on='SrNo')
```

Out[68]:

	Maths	SS	Science	SrNo	Mobile
0	10	12	12	1	54646
1	12	15	12	2	654646
2	14	12	13	3	54654

In [3]:

```
import pandas as pd
import numpy as np
```

In [3]:

```
df = pd.DataFrame({'col1':[1,2,3,4],'col2':[444,555,666,444],'col3':['abc','def','ghi','xyz']})
```

In [4]:

```
df
```

Out[4]:

	col1	col2	col3
0	1	444	abc
1	2	555	def
2	3	666	ghi
3	4	444	xyz

In [9]:

```
df['col2'].value_counts()
```

Out[9]:

```
444    2
555    1
666    1
Name: col2, dtype: int64
```

In [13]:

```
def rut(x): return x*3
```

In [14]:

```
df['col1'].apply(rut)
```

Out[14]:

```
0     3
1     6
2     9
3    12
Name: col1, dtype: int64
```

In [17]:

```
data = {'A':['foo','foo','foo','bar','bar','bar'],
     'B':['one','one','two','two','one','one'],
       'C':['x','y','x','y','x','y'],
       'D':[1,3,2,5,4,1]}
```

In [18]:

```
d=pd.DataFrame(data)
```

In [6]:

```
d
```

Out[6]:

	A	B	C	D
0	foo	one	x	1
1	foo	one	y	3
2	foo	two	x	2
3	bar	two	y	5
4	bar	one	x	4
5	bar	one	y	1

In [25]:

```
d.pivot_table(values='D',index=['A','B'],columns=['C'])
```

Out[25]:

	C	**x**	**y**
A	**B**		
bar	**one**	4.0	1.0
	two	NaN	5.0
foo	**one**	1.0	3.0
	two	2.0	NaN

In [7]:

```
d
```

Out[7]:

	A	**B**	**C**	**D**
0	foo	one	x	1
1	foo	one	y	3
2	foo	two	x	2
3	bar	two	y	5
4	bar	one	x	4
5	bar	one	y	1

In [13]:

```
d.drop('D',axis=1, inplace = True)
```

In [15]:

```
d.drop(0, inplace = True)
```

In [16]:

```
d
```

Out[16]:

	A	**B**	**C**
1	foo	one	y
2	foo	two	x
3	bar	two	y
4	bar	one	x
5	bar	one	y

In [19]:

```
d
```

Out[19]:

	A	B	C	D
0	foo	one	x	1
1	foo	one	y	3
2	foo	two	x	2
3	bar	two	y	5
4	bar	one	x	4
5	bar	one	y	1

In [20]:

```
d.sort_values(by = 'D')
```

Out[20]:

	A	B	C	D
0	foo	one	x	1
5	bar	one	y	1
2	foo	two	x	2
1	foo	one	y	3
4	bar	one	x	4
3	bar	two	y	5

In [22]:

```
pd.read_excel('Excel_Sample.xlsx',sheetname='Sheet1')
```

Out[22]:

	a	b	c	d
0	0	1	2	3
1	4	5	6	7
2	8	9	10	11
3	12	13	14	15

In [25]:

```
pd.read_excel('CAREER PLAN.xlsx', sheetname='Sheet1')
```

Out[25]:

	Online Courses	Unnamed: 1	Unnamed: 2	Unnamed: 3	Unnamed: 4	Unnamed: 5	Unnamed:
0	NaN	NaN	NaN	NaN	NaN	NaN	NaN
1	SrNo	Name	Website	Fees	Mode of Pay	Time Frame	NaN
2	NaN	NaN	NaN	NaN	NaN	NaN	NaN
3	NaN	SQL certification	Oracle	249	exam	Dec END	NaN
4	NaN	Statistics	Coursera	NaN	NaN	Nov-Dec	NaN
5	NaN	Python	Udemy	14	NaN	Dec	NaN
6	NaN	R programming	Udemy	14	NaN	Dec	NaN
7	NaN	Excel Advanced	Udemy	14	NaN	Dec-Jan	NaN
8	NaN	Statistics with R	Coursera	NaN	NaN	Dec-Jan	NaN
9	NaN	Data Sci with Python	Coursera	NaN	NaN	NaN	NaN
10	NaN	Econometrics: Time Series	Coursera	NaN	NaN	NaN	NaN
11	NaN	Data Warehousing	Coursera	49	Per month	Dec-Jan	NaN
12	NaN	Analytics and Data Visulalization	Coursera	355	per course	Jan - March	NaN
13	NaN	Business Analytics	Coursera	533	per course	Dec-Jan	NaN
14	NaN	Machine Learning	Coursera	426	per course	NaN	NaN
15	NaN	Excel Advanced	Lynda	25	Per month	Dec-Jan	NaN
16	NaN	Python	Lynda	25	Per month	Dec-Jan	NaN
17	NaN	R programming	Lynda	25	Per month	Dec-Jan	NaN
18	NaN	Tableau	Lynda	25	Per month	Dec-Jan	NaN
19	NaN	Agile Project	Lynda	25	Per month	NaN	NaN

		Management					

	Online Courses	Unnamed: 1	Unnamed: 2	Unnamed: 3	Unnamed: 4	Unnamed: 5	Unnamed:
20	NaN	C++	Lynda	25	Per month	NaN	NaN
21	NaN	Java	Lynda	25	Per month	NaN	NaN
22	NaN	Hadoop, NoSQL	Lynda	25	Per month	NaN	NaN
23	NaN	HTML	Lynda	25	Per month	NaN	NaN
24	NaN	CSS	Lynda	25	Per month	NaN	NaN
25	NaN	JavaScript	Lynda	25	Per month	NaN	NaN
26	NaN	Certification of	Google Analytics	NaN	NaN	NaN	NaN
27	NaN	Data Structure and Algorithm	Coursera	NaN	NaN	NaN	https://www
28	NaN	Scala and Spark	Udemy	15	NaN	NaN	NaN

In [1]:

```
import numpy as np
```

In [2]:

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

In [3]:

```
x
```

Out[3]:

```
array([1, 2, 3])
```

In [6]:

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

In [7]:

```
x
```

Out[7]:

```
array([[1, 2, 3],
       [4, 5, 6],
       [7, 8, 9]])
```

In [8]:

```
y=np.arange(1,10)
```

In [9]:

```
y
```

Out[9]:

```
array([1, 2, 3, 4, 5, 6, 7, 8, 9])
```

In [11]:

```
y=y.reshape(3,3)
```

In [12]:

```
y
```

Out[12]:

```
array([[1, 2, 3],
       [4, 5, 6],
       [7, 8, 9]])
```

In [23]:

```
z=np.linspace(1,10,6)
```

In [24]:

```
z=np.array(z)
```

In [25]:

```
z
```

Out[25]:

```
array([  1. ,   2.8,   4.6,   6.4,   8.2,  10. ])
```

In [26]:

```
len(z)
```

Out[26]:

```
6
```

In [28]:

```
z=z.reshape(3,2)
```

In [29]:

```
z
```

Out[29]:

```
array([[  1. ,   2.8],
       [  4.6,   6.4],
       [  8.2,  10. ]])
```

In [31]:

```
r=np.random.randint(1,100,15).reshape (3,5)
```

In [32]:

```
r
```

Out[32]:

```
array([[19, 19, 73, 37, 93],
       [90, 65, 16,  9, 21],
       [27, 11, 45, 87, 85]])
```

In [33]:

```
r.argmax()
```

Out[33]:

```
4
```

In [34]:

```
z.dtype
```

Out[34]:

```
dtype('float64')
```

In [35]:

```
x.dtype
```

Out[35]:

```
dtype('int32')
```

In [36]:

```
import randomint from random
```

```
  File "<ipython-input-36-7d1c8a0b634c>", line 1
    import randomint from random
                        ^
SyntaxError: invalid syntax
```

In [1]:

```
import numpy as np
```

In [6]:

```
x=np.random.randint(1,50,10).reshape (2,5)
```