Pandas

- pandas is an high performence in Data Analysis Tool
- More Flexible
- Pandas is store the Data in Different ways
- Pandas is Mainly uses in Missing Data
- indexing,slicing
- Pandas Data Structures in three types
  - series
    - One column Multiple rows Ex:List
  - DataFrame
    - Multiple columns and multiple rows Ex: list,Dict,sets
  - panel

In [1]:
```
# importing Libraries
import pandas as pd
import numpy as np

d= pd.Series([1,2,3,4])
```

In [2]:
```
d
```

Out[2]:
```
0    1
1    2
2    3
3    4
dtype: int64
```

In [3]:
```
d= pd.Series([1,2,3,4],index = ['a','b','c','d'])
```

In [4]:
```
d
```

Out[4]:
```
a    1
b    2
c    3
d    4
dtype: int64
```

In [5]:
```
d.index
```

Out[5]:
```
Index(['a', 'b', 'c', 'd'], dtype='object')
```

In [6]:
```
d.values
```

Out[6]:
```
array([1, 2, 3, 4], dtype=int64)
```

In [7]:
```
1 d.sum()
```

Out[7]: 10

In [8]:
```
1 d.mean()
```

Out[8]: 2.5

In [9]:
```
1 a=pd.Series(np.arange(1,10))
2 a
```

Out[9]:
```
0    1
1    2
2    3
3    4
4    5
5    6
6    7
7    8
8    9
dtype: int32
```

In [10]:
```
1 a.max()
```

Out[10]: 9

In [11]:
```
1 a.min()
```

Out[11]: 1

In [12]:
```
1 a.cumsum()
```

Out[12]:
```
0     1
1     3
2     6
3    10
4    15
5    21
6    28
7    36
8    45
dtype: int32
```

In [15]:
```
1 d=pd.date_range('01-01-2021',periods = 30)
```

In [16]:
```
1 d
```

Out[16]:
```
DatetimeIndex(['2021-01-01', '2021-01-02', '2021-01-03', '2021-01-04',
               '2021-01-05', '2021-01-06', '2021-01-07', '2021-01-08',
               '2021-01-09', '2021-01-10', '2021-01-11', '2021-01-12',
               '2021-01-13', '2021-01-14', '2021-01-15', '2021-01-16',
               '2021-01-17', '2021-01-18', '2021-01-19', '2021-01-20',
               '2021-01-21', '2021-01-22', '2021-01-23', '2021-01-24',
               '2021-01-25', '2021-01-26', '2021-01-27', '2021-01-28',
               '2021-01-29', '2021-01-30'],
              dtype='datetime64[ns]', freq='D')
```

In [23]:
```
1 a= pd.date_range(start='01-01-2021',end='02-01-2021',freq = '60S')
```

In [24]:
```
1 a
```

Out[24]:
```
DatetimeIndex(['2021-01-01 00:00:00', '2021-01-01 00:01:00',
               '2021-01-01 00:02:00', '2021-01-01 00:03:00',
               '2021-01-01 00:04:00', '2021-01-01 00:05:00',
               '2021-01-01 00:06:00', '2021-01-01 00:07:00',
               '2021-01-01 00:08:00', '2021-01-01 00:09:00',
               ...
               '2021-01-31 23:51:00', '2021-01-31 23:52:00',
               '2021-01-31 23:53:00', '2021-01-31 23:54:00',
               '2021-01-31 23:55:00', '2021-01-31 23:56:00',
               '2021-01-31 23:57:00', '2021-01-31 23:58:00',
               '2021-01-31 23:59:00', '2021-02-01 00:00:00'],
              dtype='datetime64[ns]', length=44641, freq='60S')
```

2.DataFrames

In [25]:
```
1 df = pd.DataFrame([[1,2],[3,4]])
2 df
```

Out[25]:

	0	1
0	1	2
1	3	4

In [30]:
```
1 df = pd.DataFrame({'ravi':[1,2,3,4],'anil':[5,6,7,8]},index=[1,2,3,4])
```

In [31]:
```
1 df
```

Out[31]:

	ravi	anil
1	1	5
2	2	6
3	3	7
4	4	8

In [33]:
```
1 df = pd.DataFrame({'ravi':[70,80,80,90],'anil':[60,50,70,80],'alekya':[9
```

In [34]:
```
1 df
```

Out[34]:

	ravi	anil	alekya
0	70	60	90
1	80	50	80
2	80	70	70
3	90	80	90

In [35]:
```
1 df.index = ['python','machine learning','data analysis','Django']
```

In [36]:
```
1 df
```

Out[36]:

	ravi	anil	alekya
python	70	60	90
machine learning	80	50	80
data analysis	80	70	70
Django	90	80	90

In [37]:
```
1 df.loc['machine learning']
```

Out[37]:
```
ravi      80
anil      50
alekya    80
Name: machine learning, dtype: int64
```

In [42]:
```
1 df.loc['Django']
```

Out[42]:
```
ravi      90
anil      80
alekya    90
Name: Django, dtype: int64
```

In [45]:
```
1 df.iloc[3]
```

Out[45]:
```
ravi      90
anil      80
alekya    90
Name: Django, dtype: int64
```

In [46]:
```
1 df
```

Out[46]:

	ravi	anil	alekya
python	70	60	90
machine learning	80	50	80
data analysis	80	70	70
Django	90	80	90

In [51]:
```
1 df.iloc[2:3,1:2]
```

Out[51]:

	anil
data analysis	70

In [52]:
```
1 a= pd.DataFrame({'ravi':[70,80,80,90,100,40,60],'anil':[60,50,70,80,100,
```

In [53]:
```
1 a
```

Out[53]:

	ravi	anil	alekya	girsha	vijay
0	70	60	90	70	90
1	80	50	80	80	80
2	80	70	70	90	70
3	90	80	90	110	60
4	100	100	70	40	50
5	40	50	60	30	40
6	60	60	40	60	30

In [54]:
```
1 a.index=[1,2,3,4,5,6,7]
```

In [55]:
```
1 a
```

Out[55]:

	ravi	anil	alekya	girsha	vijay
1	70	60	90	70	90
2	80	50	80	80	80
3	80	70	70	90	70
4	90	80	90	110	60
5	100	100	70	40	50
6	40	50	60	30	40
7	60	60	40	60	30

In [59]:
```
1 a.iloc[0:7:2,0:5:2]
```

Out[59]:

	ravi	alekya	vijay
1	70	90	90
3	80	70	70
5	100	70	50
7	60	40	30

In [61]:
```
1 a
```

Out[61]:

	ravi	anil	alekya	girsha	vijay
1	70	60	90	70	90
2	80	50	80	80	80
3	80	70	70	90	70
4	90	80	90	110	60
5	100	100	70	40	50
6	40	50	60	30	40
7	60	60	40	60	30

In [62]:
```
1 a.iloc[4:5,2:5:2]
```

Out[62]:

	alekya	vijay
5	70	50

In [75]:
```
1 data = {'rollnumber':['17je5a050'+str(i) for i in range(1,61)],'python':
```

In [76]:
```
1 data
```

Out[76]:
```
{'rollnumber': ['17je5a0501',
  '17je5a0502',
  '17je5a0503',
  '17je5a0504',
  '17je5a0505',
  '17je5a0506',
  '17je5a0507',
  '17je5a0508',
  '17je5a0509',
  '17je5a05010',
  '17je5a05011',
  '17je5a05012',
  '17je5a05013',
  '17je5a05014',
  '17je5a05015',
  '17je5a05016',
  '17je5a05017',
  '17je5a05018',
  '17je5a05019',
  '17je5a05020',
  '17je5a05021',
  '17je5a05022',
  '17je5a05023',
  '17je5a05024',
  '17je5a05025',
  '17je5a05026',
  '17je5a05027',
  '17je5a05028',
  '17je5a05029',
  '17je5a05030',
  '17je5a05031',
  '17je5a05032',
  '17je5a05033',
  '17je5a05034',
  '17je5a05035',
  '17je5a05036',
  '17je5a05037',
  '17je5a05038',
  '17je5a05039',
  '17je5a05040',
  '17je5a05041',
  '17je5a05042',
  '17je5a05043',
  '17je5a05044',
  '17je5a05045',
  '17je5a05046',
  '17je5a05047',
  '17je5a05048',
  '17je5a05049',
  '17je5a05050',
  '17je5a05051',
  '17je5a05052',
  '17je5a05053',
  '17je5a05054',
```

```
  '17je5a05055',
  '17je5a05056',
  '17je5a05057',
  '17je5a05058',
  '17je5a05059',
  '17je5a05060'],
 'python': array([92, 98, 41, 54, 16,  9, 26, 26, 98, 29, 15,  2, 56, 30, 5
7, 75, 35,
        92, 39, 69, 23, 22,  7, 37, 98, 18, 65,  1, 87, 30, 21, 47, 85,  8,
        74, 17, 71, 39, 44, 37, 48,  8, 59, 82, 74, 26, 58, 58, 96, 42, 35,
        82, 55,  2, 93, 87, 90, 96, 48, 18]),
 'machine learning': array([86, 68, 28, 17,  2, 34, 60, 71, 87, 65, 75, 46,
10, 27, 67,  5, 46,
        31,  6, 75, 26, 22, 15, 40, 74, 58, 27, 86, 58, 71, 41, 58, 11, 99,
         3, 60, 90, 69, 82,  4, 40, 92, 60, 15, 42, 79, 86, 11, 60, 51, 57,
        89, 71, 84, 37, 74, 73, 41, 65, 40]),
 'deep learning': array([33, 27, 35, 25, 71, 76, 55, 81, 98, 79, 18, 13, 9
7, 83, 47, 93, 46,
        51, 59, 51, 73, 67, 17, 94, 51, 61, 42, 42, 10, 60, 21, 87, 92, 82,
        37, 45, 62, 88, 27,  6, 76, 57, 36, 39, 78, 12, 92, 78, 74, 31, 28,
        71, 57, 54, 61, 88, 76, 80, 60, 52]),
 'data analysis': array([66, 38, 94, 98, 20, 57, 12, 91, 47, 19, 56, 50, 6
7, 51, 91, 42, 56,
        53, 39, 61, 27, 83, 53,  2, 18, 56, 54,  4, 13, 62, 68, 73, 32, 36,
        11, 59, 91, 21,  9, 13, 56, 14, 62, 48, 68, 34, 21, 19, 90, 77, 99,
         3, 64,  4, 67, 61, 93, 18,  9, 91])}
```

In [77]:

```
1 df=pd.DataFrame(data,index = [np.arange(1,61)])
```

In [78]:
```
1 df
```

Out[78]:

	rollnumber	python	machine learning	deep learning	data analysis
1	17je5a0501	92	86	33	66
2	17je5a0502	98	68	27	38
3	17je5a0503	41	28	35	94
4	17je5a0504	54	17	25	98
5	17je5a0505	16	2	71	20
6	17je5a0506	9	34	76	57
7	17je5a0507	26	60	55	12
8	17je5a0508	26	71	81	91
9	17je5a0509	98	87	98	47
10	17je5a05010	29	65	79	19
11	17je5a05011	15	75	18	56
12	17je5a05012	2	46	13	50
13	17je5a05013	56	10	97	67
14	17je5a05014	30	27	83	51
15	17je5a05015	57	67	47	91
16	17je5a05016	75	5	93	42
17	17je5a05017	35	46	46	56
18	17je5a05018	92	31	51	53
19	17je5a05019	39	6	59	39
20	17je5a05020	69	75	51	61
21	17je5a05021	23	26	73	27
22	17je5a05022	22	22	67	83
23	17je5a05023	7	15	17	53
24	17je5a05024	37	40	94	2
25	17je5a05025	98	74	51	18
26	17je5a05026	18	58	61	56
27	17je5a05027	65	27	42	54
28	17je5a05028	1	86	42	4
29	17je5a05029	87	58	10	13
30	17je5a05030	30	71	60	62
31	17je5a05031	21	41	21	68
32	17je5a05032	47	58	87	73
33	17je5a05033	85	11	92	32
34	17je5a05034	8	99	82	36

	rollnumber	python	machine learning	deep learning	data analysis
35	17je5a05035	74	3	37	11
36	17je5a05036	17	60	45	59
37	17je5a05037	71	90	62	91
38	17je5a05038	39	69	88	21
39	17je5a05039	44	82	27	9
40	17je5a05040	37	4	6	13
41	17je5a05041	48	40	76	56
42	17je5a05042	8	92	57	14
43	17je5a05043	59	60	36	62
44	17je5a05044	82	15	39	48
45	17je5a05045	74	42	78	68
46	17je5a05046	26	79	12	34
47	17je5a05047	58	86	92	21
48	17je5a05048	58	11	78	19
49	17je5a05049	96	60	74	90
50	17je5a05050	42	51	31	77
51	17je5a05051	35	57	28	99
52	17je5a05052	82	89	71	3
53	17je5a05053	55	71	57	64
54	17je5a05054	2	84	54	4
55	17je5a05055	93	37	61	67
56	17je5a05056	87	74	88	61
57	17je5a05057	90	73	76	93
58	17je5a05058	96	41	80	18
59	17je5a05059	48	65	60	9
60	17je5a05060	18	40	52	91

In [79]:
```
1 df.head()
```

Out[79]:

	rollnumber	python	machine learning	deep learning	data analysis
1	17je5a0501	92	86	33	66
2	17je5a0502	98	68	27	38
3	17je5a0503	41	28	35	94
4	17je5a0504	54	17	25	98
5	17je5a0505	16	2	71	20

In [80]:
```
1 df.tail()
```

Out[80]:

	rollnumber	python	machine learning	deep learning	data analysis
56	17je5a05056	87	74	88	61
57	17je5a05057	90	73	76	93
58	17je5a05058	96	41	80	18
59	17je5a05059	48	65	60	9
60	17je5a05060	18	40	52	91

In [81]:
```
1 df.sample(5)
```

Out[81]:

	rollnumber	python	machine learning	deep learning	data analysis
51	17je5a05051	35	57	28	99
5	17je5a0505	16	2	71	20
58	17je5a05058	96	41	80	18
41	17je5a05041	48	40	76	56
27	17je5a05027	65	27	42	54

In [82]:
```
1 df['machine learning']
```

Out[82]:

1	86
2	68
3	28
4	17
5	2
6	34
7	60
8	71
9	87
10	65
11	75
12	46
13	10
14	27
15	67
16	5
17	46
18	31
19	6
20	75
21	26
22	22
23	15
24	40
25	74
26	58
27	27
28	86
29	58
30	71
31	41
32	58
33	11
34	99
35	3
36	60
37	90
38	69
39	82
40	4
41	40
42	92
43	60
44	15
45	42
46	79
47	86
48	11
49	60
50	51
51	57
52	89
53	71
54	84

```
55    37
56    74
57    73
58    41
59    65
60    40
Name: machine learning, dtype: int32
```

In [83]:
```
1 df['machine learning'].head()
```

Out[83]:
```
1    86
2    68
3    28
4    17
5     2
Name: machine learning, dtype: int32
```

In [84]:
```
1 df['machine learning'].sample(5)
```

Out[84]:
```
32    58
18    31
9     87
10    65
19     6
Name: machine learning, dtype: int32
```

In [85]:
```
1 df
```

Out[85]:

	rollnumber	python	machine learning	deep learning	data analysis
1	17je5a0501	92	86	33	66
2	17je5a0502	98	68	27	38
3	17je5a0503	41	28	35	94
4	17je5a0504	54	17	25	98
5	17je5a0505	16	2	71	20
6	17je5a0506	9	34	76	57
7	17je5a0507	26	60	55	12
8	17je5a0508	26	71	81	91
9	17je5a0509	98	87	98	47
10	17je5a05010	29	65	79	19
11	17je5a05011	15	75	18	56
12	17je5a05012	2	46	13	50
13	17je5a05013	56	10	97	67
14	17je5a05014	30	27	83	51
15	17je5a05015	57	67	47	91
16	17je5a05016	75	5	93	42
17	17je5a05017	35	46	46	56
18	17je5a05018	92	31	51	53
19	17je5a05019	39	6	59	39
20	17je5a05020	69	75	51	61
21	17je5a05021	23	26	73	27
22	17je5a05022	22	22	67	83
23	17je5a05023	7	15	17	53
24	17je5a05024	37	40	94	2
25	17je5a05025	98	74	51	18
26	17je5a05026	18	58	61	56
27	17je5a05027	65	27	42	54
28	17je5a05028	1	86	42	4
29	17je5a05029	87	58	10	13
30	17je5a05030	30	71	60	62
31	17je5a05031	21	41	21	68
32	17je5a05032	47	58	87	73
33	17je5a05033	85	11	92	32
34	17je5a05034	8	99	82	36

	rollnumber	python	machine learning	deep learning	data analysis
35	17je5a05035	74	3	37	11
36	17je5a05036	17	60	45	59
37	17je5a05037	71	90	62	91
38	17je5a05038	39	69	88	21
39	17je5a05039	44	82	27	9
40	17je5a05040	37	4	6	13
41	17je5a05041	48	40	76	56
42	17je5a05042	8	92	57	14
43	17je5a05043	59	60	36	62
44	17je5a05044	82	15	39	48
45	17je5a05045	74	42	78	68
46	17je5a05046	26	79	12	34
47	17je5a05047	58	86	92	21
48	17je5a05048	58	11	78	19
49	17je5a05049	96	60	74	90
50	17je5a05050	42	51	31	77
51	17je5a05051	35	57	28	99
52	17je5a05052	82	89	71	3
53	17je5a05053	55	71	57	64
54	17je5a05054	2	84	54	4
55	17je5a05055	93	37	61	67
56	17je5a05056	87	74	88	61
57	17je5a05057	90	73	76	93
58	17je5a05058	96	41	80	18
59	17je5a05059	48	65	60	9
60	17je5a05060	18	40	52	91

In [86]:
```
1 df.iloc[50]
```

Out[86]:
```
rollnumber          17je5a05051
python                       35
machine learning             57
deep learning                28
data analysis                99
Name: (51,), dtype: object
```

In [89]:
```
1 df.loc[50:61][['rollnumber','python','machine learning']]
```

Out[89]:

	rollnumber	python	machine learning
50	17je5a05050	42	51
51	17je5a05051	35	57
52	17je5a05052	82	89
53	17je5a05053	55	71
54	17je5a05054	2	84
55	17je5a05055	93	37
56	17je5a05056	87	74
57	17je5a05057	90	73
58	17je5a05058	96	41
59	17je5a05059	48	65
60	17je5a05060	18	40

In [90]:
```
1 df.isnull().sum()
```

Out[90]:
```
rollnumber          0
python              0
machine learning    0
deep learning       0
data analysis       0
dtype: int64
```

In [91]:
```
1 data = {'ravi':[40,50,np.nan,60,70],'anil':[70,np.nan,60,np.nan,80]}
```

In [92]:
```
1 data
```

Out[92]:
```
{'ravi': [40, 50, nan, 60, 70], 'anil': [70, nan, 60, nan, 80]}
```

In [93]:
```
1 df = pd.DataFrame(data,index = [1,2,3,4,5])
```

In [94]:
```
1 df
```

Out[94]:

	ravi	anil
1	40.0	70.0
2	50.0	NaN
3	NaN	60.0
4	60.0	NaN
5	70.0	80.0

In [95]:
```
1 df.isnull().sum()
```

Out[95]:
```
ravi    1
anil    2
dtype: int64
```

In [96]:
```
1 df.fillna(50)
```

Out[96]:

	ravi	anil
1	40.0	70.0
2	50.0	50.0
3	50.0	60.0
4	60.0	50.0
5	70.0	80.0

In [97]:
```
1 df
```

Out[97]:

	ravi	anil
1	40.0	70.0
2	50.0	NaN
3	NaN	60.0
4	60.0	NaN
5	70.0	80.0

In [98]:
```
1 df.dropna()
```

Out[98]:

	ravi	anil
1	40.0	70.0
5	70.0	80.0

In [99]:
```
1 df.fillna(method = 'ffill')
```

Out[99]:

	ravi	anil
1	40.0	70.0
2	50.0	70.0
3	50.0	60.0
4	60.0	60.0
5	70.0	80.0

In [100]:
```
df.fillna(method = 'bfill')
```

Out[100]:

	ravi	anil
1	40.0	70.0
2	50.0	60.0
3	60.0	60.0
4	60.0	80.0
5	70.0	80.0

In [102]:
```
df.fillna(method='ffill',inplace = True)
```

In [103]:
```
df
```

Out[103]:

	ravi	anil
1	40.0	70.0
2	50.0	70.0
3	50.0	60.0
4	60.0	60.0
5	70.0	80.0

In [104]:
```
d=pd.read_csv('https://raw.githubusercontent.com/AP-State-Skill-Developm
d
```

Out[104]:

	GEOID	State	2005	2006	2007	2008	2009	2010	2011	2012	2013
0	04000US01	Alabama	37150	37952	42212	44476	39980	40933	42590	43464	41381
1	04000US02	Alaska	55891	56418	62993	63989	61604	57848	57431	63648	61137
2	04000US04	Arizona	45245	46657	47215	46914	45739	46896	48621	47044	50602
3	04000US05	Arkansas	36658	37057	40795	39586	36538	38587	41302	39018	39919
4	04000US06	California	51755	55319	55734	57014	56134	54283	53367	57020	57528

In [109]:
```
df = pd.read_csv("income.csv")
```

In [107]:
```
1 df
```

Out[107]:

	GEOID	State	2005	2006	2007	2008	2009	2010	2011	2012	2013
0	04000US01	Alabama	37150	37952	42212	44476	39980	40933	42590	43464	41381
1	04000US02	Alaska	55891	56418	62993	63989	61604	57848	57431	63648	61137
2	04000US04	Arizona	45245	46657	47215	46914	45739	46896	48621	47044	50602
3	04000US05	Arkansas	36658	37057	40795	39586	36538	38587	41302	39018	39919
4	04000US06	California	51755	55319	55734	57014	56134	54283	53367	57020	57528

In [110]:
```
1 df.shape
```

Out[110]: (5, 11)

In [111]:
```
1 df.isnull().sum()
```

Out[111]:
```
GEOID    0
State    0
2005     0
2006     0
2007     0
2008     0
2009     0
2010     0
2011     0
2012     0
2013     0
dtype: int64
```

In [115]:
```
1 df = pd.read_csv('income.csv')
```

In [116]:
```
1 df
```

Out[116]:

	GEOID	State	2005	2006	2007	2008	2009	2010	2011	2012	201
0	04000US01	Alabama	37150	37952.0	42212	44476.0	39980	40933.0	42590	43464	4138
1	04000US02	Alaska	55891	56418.0	62993	NaN	61604	57848.0	57431	63648	6113
2	04000US04	Arizona	45245	NaN	47215	46914.0	45739	NaN	48621	47044	5060
3	04000US05	Arkansas	36658	37057.0	40795	NaN	36538	38587.0	41302	39018	3991
4	04000US06	California	51755	55319.0	55734	57014.0	56134	54283.0	53367	57020	5752

In [117]:
```
1 df.isnull().sum()
```

Out[117]:
```
GEOID    0
State    0
2005     0
2006     1
2007     0
2008     2
2009     0
2010     1
2011     0
2012     0
2013     0
dtype: int64
```

In [124]:
```
1 df.fillna(67189,inplace = True)
```

In [125]:
```
1 df
```

Out[125]:

	GEOID	State	2005	2006	2007	2008	2009	2010	2011	2012	201
0	04000US01	Alabama	37150	37952.0	42212	44476.0	39980	40933.0	42590	43464	4138
1	04000US02	Alaska	55891	56418.0	62993	67189.0	61604	57848.0	57431	63648	6113
2	04000US04	Arizona	45245	67189.0	47215	46914.0	45739	67189.0	48621	47044	5060
3	04000US05	Arkansas	36658	37057.0	40795	67189.0	36538	38587.0	41302	39018	3991
4	04000US06	California	51755	55319.0	55734	57014.0	56134	54283.0	53367	57020	5752

In [126]:
```
1 df.isnull().sum()
```

Out[126]:
```
GEOID    0
State    0
2005     0
2006     0
2007     0
2008     0
2009     0
2010     0
2011     0
2012     0
2013     0
dtype: int64
```

In [127]:
```
1 data = {'ravi':[40,50,np.nan,60,70],'anil':[70,np.nan,60,np.nan,80]}
```

In [128]:
```
1 data
```

Out[128]:
```
{'ravi': [40, 50, nan, 60, 70], 'anil': [70, nan, 60, nan, 80]}
```

In [129]:
```
1 df = pd.DataFrame(data,index=[1,2,3,4,5])
```

In [133]:
```
1 df['anil'].fillna(60,inplace=True)
```

In [134]:
```
1 df
```

Out[134]:

	ravi	anil
1	40.0	70.0
2	50.0	60.0
3	60.0	60.0
4	60.0	60.0
5	70.0	80.0

In [135]:
```
1 df.sum()
```

Out[135]:
```
ravi    280.0
anil    330.0
dtype: float64
```

In [136]:
```
1 df.min()
```

Out[136]:
```
ravi    40.0
anil    60.0
dtype: float64
```

In [137]:
```
1 df.max()
```

Out[137]:
```
ravi    70.0
anil    80.0
dtype: float64
```

In [138]:
```
1 df['ravi'].mean()
```

Out[138]:
```
56.0
```

In [139]:
```
1 df['anil'].mean()
```

Out[139]:
```
66.0
```

In [ ]:
```
1
```