TheDataLytics

python™

ANUURAG EDLABADKAR

#Priyadarshini Bhagwati College of Engineering, Harpur Nagar, Umred Rd, Near Bada, Taj Bagh, Nagpur, Maharashtra 440024

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

```
# Create Series
```

```
var_lst =
['and','as','assert','break','class','continue','def','del','elif']
ser1 = pd.Series(var_lst)
ser1
```

```
0         and
1          as
2      assert
3       break
4       class
5    continue
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
6         def
7         del
8        elif
dtype: object
```

```
# Create Series

var_tup =
('else','except','False','finally','for','from','global','if','import'
,'in','is','lambda')
ser2 = pd.Series(var_tup)
ser2
```

```
0        else
1      except
2       False
3     finally
4         for
5        from
6      global
7          if
8      import
9          in
10         is
11     lambda
dtype: object
```


```
var_dict =
{'None':'nonlocal','not':'or','pass':'raise','return':'True','try':'wh
ile','with':'yield'}
ser3 = pd.Series(var_dict)
ser3
```

```
None      nonlocal
not             or
pass         raise
return        True
try          while
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
with         yield
dtype: object
```

```
arr = np.array([91,82,73,64,55,46,37,28,19,0])
ser4 = pd.Series(arr)
ser4
```

```
0    91
1    82
2    73
3    64
4    55
5    46
6    37
7    28
8    19
9     0
dtype: int64
```

```
arr =
np.array(['Canada','China','Indonesia','India','Japan','Mexico','Taiwa
n','United States'])
ser5 = pd.Series(arr)
ser5
```

```
0           Canada
1            China
2        Indonesia
3            India
4            Japan
5           Mexico
6           Taiwan
7    United States
dtype: object
```

Python Pandas - Series Inbuilt Functions

```
ser5.index
RangeIndex(start=0, stop=8, step=1)
ser1.dtype, ser2.dtype, ser3.dtype, ser4.dtype, ser5.dtype
(dtype('O'), dtype('O'), dtype('O'), dtype('int64'), dtype('O'))
ser1.dtypes, ser2.dtypes, ser3.dtypes, ser4.dtypes, ser5.dtypes
(dtype('O'), dtype('O'), dtype('O'), dtype('int64'), dtype('O'))
ser1.size, ser2.size, ser3.size, ser4.size, ser5.size
(9, 12, 6, 10, 8)
ser1.nbytes, ser2.nbytes, ser3.nbytes, ser4.nbytes, ser5.nbytes
(72, 96, 48, 80, 64)
ser1.shape, ser2.shape, ser3.shape, ser4.shape, ser5.shape
((9,), (12,), (6,), (10,), (8,))
ser1.ndim, ser2.ndim, ser3.ndim, ser4.ndim, ser5.ndim
(1, 1, 1, 1, 1)
len(ser1), len(ser2), len(ser3), len(ser4), len(ser5)
(9, 12, 6, 10, 8)
```


```
ser1.count(), ser2.count(), ser3.count(), ser4.count(), ser5.count()
(9, 12, 6, 10, 8)
ser1.size, ser2.size, ser3.size, ser4.size, ser5.size
(9, 12, 6, 10, 8)
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
ser6 = pd.Series(['a1','b2','c3','d4','e5','f6','g7'],
index=['ga','fb','ec','dd','ce','bf','ag'])
ser6
```

```
ga    a1
fb    b2
ec    c3
dd    d4
ce    e5
bf    f6
ag    g7
dtype: object
```

```
ser1.index = [11,22,33,44,55,66,77,88,99]
ser1
```

```
11         and
22          as
33      assert
44       break
55       class
66    continue
77         def
88         del
99        elif
dtype: object
```

```
v2 = np.random.random(10)
ind2 = np.arange(0,10)
ser8 = pd.Series(v2, ind2)
v2, ind2, ser8
```

```
(array([0.28141458, 0.26587348, 0.69756947, 0.20921436, 0.41197759,
        0.97610539, 0.23001177, 0.58311141, 0.38289374, 0.91260225]),
 array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9]),
 0    0.281415
 1    0.265873
 2    0.697569
 3    0.209214
 4    0.411978
 5    0.976105
 6    0.230012
 7    0.583111
 8    0.382894
 9    0.912602
 dtype: float64)
```

```
ser9 = pd.Series(123, index=[3,4,5,6,7,8,9,10])
ser9
```

```
3     123
4     123
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
5     123
6     123
7     123
8     123
9     123
10    123
dtype: int64
```

Python Pandas - Series Slicing

```
ser8
```

```
0    0.281415
1    0.265873
2    0.697569
3    0.209214
4    0.411978
5    0.976105
6    0.230012
7    0.583111
8    0.382894
9    0.912602
dtype: float64
```

```
ser8[:]
```

```
0    0.281415
1    0.265873
2    0.697569
3    0.209214
4    0.411978
5    0.976105
6    0.230012
7    0.583111
8    0.382894
9    0.912602
dtype: float64
```

```
ser8[1:8], ser8[2:7], ser8[3:6], ser8[4:5]
```

```
(1    0.265873
 2    0.697569
 3    0.209214
 4    0.411978
 5    0.976105
 6    0.230012
 7    0.583111
 dtype: float64, 2    0.697569
 3    0.209214
 4    0.411978
 5    0.976105
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
 6    0.230012
 dtype: float64, 3    0.209214
 4    0.411978
 5    0.976105
 dtype: float64, 4    0.411978
 dtype: float64)
```

```
ser8[0:9], ser8[0:8], ser8[0:7], ser8[0:6], ser8[0:5], ser8[0:4],
ser8[0:3]
```

```
(0    0.281415
 1    0.265873
 2    0.697569
 3    0.209214
 4    0.411978
 5    0.976105
 6    0.230012
 7    0.583111
 8    0.382894
 dtype: float64, 0    0.281415
 1    0.265873
 2    0.697569
 3    0.209214
 4    0.411978
 5    0.976105
 6    0.230012
 7    0.583111
 dtype: float64, 0    0.281415
 1    0.265873
 2    0.697569
 3    0.209214
 4    0.411978
 5    0.976105
 6    0.230012
 dtype: float64, 0    0.281415
 1    0.265873
 2    0.697569
 3    0.209214
 4    0.411978
 5    0.976105
 dtype: float64, 0    0.281415
 1    0.265873
 2    0.697569
 3    0.209214
 4    0.411978
 dtype: float64, 0    0.281415
 1    0.265873
 2    0.697569
 3    0.209214
 dtype: float64, 0    0.281415
 1    0.265873
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
 2    0.697569
 dtype: float64)
```

```
ser8[-1:], ser8[-2:], ser8[-3:], ser8[-4:], ser8[-5:], ser8[-6:],
ser8[-7:]
```

```
(9    0.912602
 dtype: float64, 8    0.382894
 9    0.912602
 dtype: float64, 7    0.583111
 8    0.382894
 9    0.912602
 dtype: float64, 6    0.230012
 7    0.583111
 8    0.382894
 9    0.912602
 dtype: float64, 5    0.976105
 6    0.230012
 7    0.583111
 8    0.382894
 9    0.912602
 dtype: float64, 4    0.411978
 5    0.976105
 6    0.230012
 7    0.583111
 8    0.382894
 9    0.912602
 dtype: float64, 3    0.209214
 4    0.411978
 5    0.976105
 6    0.230012
 7    0.583111
 8    0.382894
 9    0.912602
 dtype: float64)
```

```
ser8[:9], ser8[:8], ser8[:7], ser8[:6], ser8[:5], ser8[:4], ser8[:3]
```

```
(0    0.281415
 1    0.265873
 2    0.697569
 3    0.209214
 4    0.411978
 5    0.976105
 6    0.230012
 7    0.583111
 8    0.382894
 dtype: float64, 0    0.281415
 1    0.265873
 2    0.697569
 3    0.209214
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
 4    0.411978
 5    0.976105
 6    0.230012
 7    0.583111
 dtype: float64, 0    0.281415
 1    0.265873
 2    0.697569
 3    0.209214
 4    0.411978
 5    0.976105
 6    0.230012
 dtype: float64, 0    0.281415
 1    0.265873
 2    0.697569
 3    0.209214
 4    0.411978
 5    0.976105
 dtype: float64, 0    0.281415
 1    0.265873
 2    0.697569
 3    0.209214
 4    0.411978
 dtype: float64, 0    0.281415
 1    0.265873
 2    0.697569
 3    0.209214
 dtype: float64, 0    0.281415
 1    0.265873
 2    0.697569
 dtype: float64)
```

```
ser8[:-7], ser8[:-6], ser8[:-5], ser8[:-4], ser8[:-3], ser8[:-2],
ser8[:-1]
```

```
(0    0.281415
 1    0.265873
 2    0.697569
 dtype: float64, 0    0.281415
 1    0.265873
 2    0.697569
 3    0.209214
 dtype: float64, 0    0.281415
 1    0.265873
 2    0.697569
 3    0.209214
 4    0.411978
 dtype: float64, 0    0.281415
 1    0.265873
 2    0.697569
 3    0.209214
 4    0.411978
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
5    0.976105
dtype: float64, 0    0.281415
1    0.265873
2    0.697569
3    0.209214
4    0.411978
5    0.976105
6    0.230012
dtype: float64, 0    0.281415
1    0.265873
2    0.697569
3    0.209214
4    0.411978
5    0.976105
6    0.230012
7    0.583111
dtype: float64, 0    0.281415
1    0.265873
2    0.697569
3    0.209214
4    0.411978
5    0.976105
6    0.230012
7    0.583111
8    0.382894
dtype: float64)
```

Python Pandas - Series Append


```
cp_ser4 = ser4.copy()
ser4, cp_ser4
```

```
(0    91
 1    82
 2    73
 3    64
 4    55
```

```
 5    46
 6    37
 7    28
 8    19
 9     0
 dtype: int64, 0    91
 1    82
 2    73
 3    64
 4    55
 5    46
 6    37
 7    28
 8    19
 9     0
 dtype: int64)
```

```
ser10 = ser1.append(ser2)
ser10
```

```
11         and
22          as
33      assert
44       break
55       class
66    continue
77         def
88         del
99        elif
0         else
1       except
2        False
3      finally
4          for
5         from
6       global
7           if
8       import
9           in
10          is
11      lambda
dtype: object
```

```
ser5
```

```
0           Canada
1            China
2        Indonesia
3            India
4            Japan
5           Mexico
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
6           Taiwan
7    United States
dtype: object
```

```
ser5.drop(7, inplace=False)
```

```
0       Canada
1        China
2    Indonesia
3        India
4        Japan
5       Mexico
6       Taiwan
dtype: object
```

```
ser5
```

```
0           Canada
1            China
2        Indonesia
3            India
4            Japan
5           Mexico
6           Taiwan
7    United States
dtype: object
```

```
ser5.drop(7, inplace=True)
```

```
ser5
```

```
0       Canada
1        China
2    Indonesia
3        India
4        Japan
5       Mexico
6       Taiwan
dtype: object
```

```
ser5 = ser5.append(pd.Series({7:'US', 8:'UK', 9:'UAE'}))
ser5
```

```
0       Canada
1        China
2    Indonesia
3        India
4        Japan
5       Mexico
6       Taiwan
7           US
8           UK
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
9          UAE
dtype: object
```

Python Pandas - Series Operations

```
dict1 = {1:2,3:4,5:6,7:8,9:10}
ser1 = pd.Series(dict1)
dict2 = {1:22,3:44,5:66,7:88,9:110}
ser2 = pd.Series(dict2)
ser1, ser2
```

```
(1     2
 3     4
 5     6
 7     8
 9    10
 dtype: int64, 1     22
 3     44
 5     66
 7     88
 9    110
 dtype: int64)
```

```
ser1.add(ser2)
```

```
1     24
3     48
5     72
7     96
9    120
dtype: int64
```

```
ser1, ser2
```

```
(1     2
 3     4
 5     6
 7     8
 9    10
 dtype: int64, 1     22
 3     44
 5     66
 7     88
 9    110
 dtype: int64)
```

```
ser1.sub(ser2)
```

```
1    -20
3    -40
5    -60
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
7    -80
9   -100
dtype: int64

ser1, ser2

(1     2
 3     4
 5     6
 7     8
 9    10
 dtype: int64, 1     22
 3     44
 5     66
 7     88
 9    110
 dtype: int64)

ser1.subtract(ser2)

1    -20
3    -40
5    -60
7    -80
9   -100
dtype: int64

ser1, ser2

(1     2
 3     4
 5     6
 7     8
 9    10
 dtype: int64, 1     22
 3     44
 5     66
 7     88
 9    110
 dtype: int64)

ser1.div(ser2)

1    0.090909
3    0.090909
5    0.090909
7    0.090909
9    0.090909
dtype: float64

ser1, ser2
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
(1     2
 3     4
 5     6
 7     8
 9    10
 dtype: int64, 1     22
 3     44
 5     66
 7     88
 9    110
 dtype: int64)
```

```
ser2.divide(ser1)
```

```
1    11.0
3    11.0
5    11.0
7    11.0
9    11.0
dtype: float64
```

```
ser1, ser2
```

```
(1     2
 3     4
 5     6
 7     8
 9    10
 dtype: int64, 1     22
 3     44
 5     66
 7     88
 9    110
 dtype: int64)
```

```
ser1.mul(ser2)
```

```
1      44
3     176
5     396
7     704
9    1100
dtype: int64
```

```
ser1, ser2
```

```
(1     2
 3     4
 5     6
 7     8
 9    10
 dtype: int64, 1     22
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
 3     44
 5     66
 7     88
 9    110
 dtype: int64)
```

```
ser1.multiply(ser2)
```

```
1      44
3     176
5     396
7     704
9    1100
dtype: int64
```


```
ser1, ser2
```

```
(1     2
 3     4
 5     6
 7     8
 9    10
 dtype: int64, 1     22
 3     44
 5     66
 7     88
 9    110
 dtype: int64)
```

```
ser1.max(), ser2.max()
```

```
(10, 110)
```

```
ser1.min(), ser2.min()
```

```
(2, 22)
```

```
ser1.mean(), ser2.mean()
```

```
(6.0, 66.0)
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
ser1, ser2
```

```
(1     2
 3     4
 5     6
 7     8
 9    10
 dtype: int64, 1     22
 3     44
 5     66
 7     88
 9    110
 dtype: int64)
```

```
ser1.median(), ser2.median()
```

```
(6.0, 66.0)
```

```
ser1.std(), ser2.std()
```

```
(3.1622776601683795, 34.785054261852174)
```

```
ser1.equals(ser2)
```

```
False
```

```
ser2.equals(ser1)
```

```
False
```

```
ser1 = ser2
```

```
ser1.equals(ser2)
```

```
True
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832