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

creating series from scalar values

```
a=pd.Series([10,20,30])
```

```
a1
```

```
0    10
1    20
2    30
dtype: int64
```

```
list1 = [10,20,30]
a1 = pd.Series(list1)
```

```
a1
```

```
0    10
1    20
2    30
dtype: int64
```

```
a2=pd.Series(["Ram","Sam","Rik","Nik"], index=[1,2,3,4])
```

```
a2
```

```
1    Ram
2    Sam
3    Rik
4    Nik
dtype: object
```

```
a2=pd.Series(["Ram","Sam","Rik","Nik"], index=3,4,2,1])
```

```
a2
```

```
3    Ram
4    Sam
2    Rik
1    Nik
dtype: object
```

```
labls=e= ["a","b","c","d"]
l2= ["Ram","Sam","Rik","Nik"]
```

```
a3=pd.Series(l2,labls)
```

```
a3
```

```
a    Ram
b    Sam
c    Rik
d    Nik
dtype: object
```

```
array1=np.array([1,2,3,4])
```

```
a4=pd.Series(array1)
```

```
a4
```

```
0    1
1    2
2    3
3    4
dtype: int32
```

```
a4=pd.Series(array1,index=["Jan","Feb","Mar","Apr"])
```

```
a4
```

```
Jan    1
Feb    2
Mar    3
Apr    4
dtype: int32
```

#indexing

```
a1
```

```
0    10
1    20
2    30
dtype: int64
```

```
a1[1]
```

```
20
```

```
a1[0]
```

```
10
```

```
a1[2]
```

```
30
```

```
a3=pd.Series(["New Delhi","WashingtonDC", "London","Paris"],index=["India","USA","UK","France"])
```

```
a3
```

```
India       New Delhi
USA       WashingtonDC
UK             London
France          Paris
dtype: object
```

```
a3[1]
```

```
C:\Users\student\AppData\Local\Temp\ipykernel_30396\2238760957.py:1: FutureWarning: Series.__getitem__ treating keys as positions is deprecated. In a future version, integer keys will always be treated as la
bels (consistent with DataFrame behavior). To access a value by position, use `ser.iloc[pos]`
  a3[1]
'WashingtonDC'
```

```
a3[2]
```

```
C:\Users\student\AppData\Local\Temp\ipykernel_30396\1784230481.py:1: FutureWarning: Series.__getitem__ treating keys as positions is deprecated. In a future version, integer keys will always be treated as la
bels (consistent with DataFrame behavior). To access a value by position, use `ser.iloc[pos]`
  a3[2]
'London'
```

```
a3[3]
```

```
C:\Users\student\AppData\Local\Temp\ipykernel_30396\1398816226.py:1: FutureWarning: Series.__getitem__ treating keys as positions is deprecated. In a future version, integer keys will always be treated as la
bels (consistent with DataFrame behavior). To access a value by position, use `ser.iloc[pos]`
  a3[3]
'Paris'
```

```
a3[0]
```

```
C:\Users\student\AppData\Local\Temp\ipykernel_30396\4103757207.py:1: FutureWarning: Series.__getitem__ treating keys as positions is deprecated. In a future version, integer keys will always be treated as la
bels (consistent with DataFrame behavior). To access a value by position, use `ser.iloc[pos]`
  a3[0]
'New Delhi'
```

```
a3[1,2]
```

```
C:\Users\student\AppData\Local\Temp\ipykernel_30396\3525924611.py:1: FutureWarning: Series.__getitem__ treating keys as positions is deprecated. In a future version, integer keys will always be treated as la
bels (consistent with DataFrame behavior). To access a value by position, use `ser.iloc[pos]`
  a3[1,2]
USA   WashingtonDC
UK           London
dtype: object
```

```
a3[["UK","USA"]]
```

```
UK          London
USA   WashingtonDC
dtype: object
```

```
a3.index=[10,20,30,40]
```

```
a3
```

```
10       New Delhi
20    WashingtonDC
30          London
40           Paris
dtype: object
```

#slicing

```
a3
```

```
10       New Delhi
20    WashingtonDC
30          London
40           Paris
dtype: object
```

```
a4=pd.Series(["New Delhi","WashingtonDC", "London","Paris"],index=["India","USA","UK","France"])
```

```
a4
```

```
India       New Delhi
USA      WashingtonDC
UK             London
France          Paris
dtype: object
```

```
a4[0:4]
```

```
Series([], dtype: object)
```

```
a4["USA","France"]
```

```
USA      WashingtonDC
France          Paris
dtype: object
```

```
a4[:4]
```

```
India       New Delhi
USA      WashingtonDC
UK             London
France          Paris
dtype: object
```

```
a4[:-1]
```

```
India       New Delhi
USA      WashingtonDC
UK             London
dtype: object
```

```
a4[ 1 :-1]
```

```
USA      WashingtonDC
UK             London
dtype: object
```

```
a4[ 1 :-1]
```

```
USA      WashingtonDC
UK             London
dtype: object
```

```
a4[:-2]
```

```
India       New Delhi
USA      WashingtonDC
dtype: object
```

```
a4[ 1 :-1]
```

```
USA      WashingtonDC
UK             London
dtype: object
```

```
a=pd.Series(np.arange(10,16,1),index=["a","b","c","d","e","f"])
```

```
a
```

```
a    10
b    11
c    12
d    13
e    14
f    15
dtype: int32
```

```
a[1:]+a[:5]
```

```
a    NaN
b    NaN
c    NaN
d    NaN
e    NaN
f    NaN
dtype: float64
```

```
a*2
```

```
a    20
b    22
c    24
d    26
e    28
f    30
dtype: int32
```

```
a**2
```

```
a    100
b    121
c    144
d    169
e    196
f    225
dtype: int32
```

#withdotvar

```
a6
```

```
India       New Delhi
USA      WashingtonDC
UK             London
France          Paris
dtype: object
```

```
a6.name="capitals"
```

```
a6
```

```
India       New Delhi
USA      WashingtonDC
UK             London
France          Paris
Name: capitals, dtype: object
```

```
a6.index.name="Countries"
```

```
a6
```

```
Countries
India       New Delhi
USA      WashingtonDC
UK             London
France          Paris
Name: capitals, dtype: object
```

```
print(a6.values)
```

```
['New Delhi' 'WashingtonDC' 'London' 'Paris']
```

```
print(a6.size)
```

```
4
```

```
a6.empty
```

```
False
```

```
a7
```

```
a    10
b    50
c   100
d   150
e   100
f   125
dtype: int32
```

```
a=pd.Series(np.arange(10,16,1))
```

```
a
```

```
0    10
1    11
2    12
3    13
4    14
5    15
dtype: int32
```

```
a.head(2)
```

```
0    10
1    11
dtype: int32
```

```
a.tail(3)
```

```
3    13
4    14
5    15
dtype: int32
```

```
a6.count()
```

```
4
```

```
a=pd.Series(np.arange(5,7,1),index=["a","b","c","d","e","f"])
```

```
a
```

```
a    5
b    6
c    7
d    8
e    9
f   10
dtype: int32
```

```
a=pd.Series([10,20,-10,-50,100,120],index=["a","g","c","d","e","f"])
```

```
a
```

```
a     10
g     20
c    -10
d    -50
e    100
f    120
dtype: int64
```

```
a+a+a
```

```
a    NaN
b    NaN
c   -7.0
d  -66.0
e    NaN
f    NaN
g    NaN
h    NaN
dtype: float64
```

```
a.add(a,fill_value=0)
```

```
a    10.0
b     2.0
c    -7.0
d   -66.0
e    -9.0
f   129.0
g    100.0
h     20.0
i      5.0
dtype: float64
```

```
a+a+a
```

```
a    NaN
b    NaN
c   13.0
d   -6.0
e    NaN
f   114.0
g    NaN
h    NaN
i    NaN
dtype: float64
```

```
a.sub(a,fill_value=100)
```

```
a   -99.0
b     3.0
c    13.0
d    54.0
e   -91.0
f   -114.0
g     0.0
h    80.0
i    95.0
dtype: float64
```

```
a*a
```

```
a    NaN
b    NaN
c   -30.0
d   -200.0
e    NaN
f   720.0
g     NaN
h     NaN
dtype: float64
```

```
a.mul(a,fill_value=0)
```

```
a    4.0
b    9.0
c   -30.0
d   -200.0
e    0.0
f   720.0
g    0.0
h    0.0
i    0.0
dtype: float64
```

```
a/a
```

```
a    NaN
b    NaN
c   -1.0
d   -1.0
e    NaN
f    1.0
g    NaN
h    NaN
dtype: float64
```

```
a.div(a,fill_value=0)
```

```
a    0.25
b    0.20
c   -1.00
d   -0.66
e    0.50
f    0.86
g    0.00
h    0.00
i    0.00
dtype: float64
```

```
a    1.02
dtype: float64
```