Pandas Series | Mastering In Python Pandas Library

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pandas.Series

Pandas Series is a One Dimensional indexed array. It is most similar to the NumPy array. **pandas.Series** is a method to create a series.

Here practically explanation about **Series**.
For using pandas library in Jupyter Notebook IDE or any Python IDE or IDLE, we need to import Pandas, using the **import** keyword

```
1 import pandas as pd
```

Here we are using **as** keyword to short pandas name as "**pd**"

The latest version of Pandas Library is 0.24.2 released on 12 March 2019. To know the version of Jupyter Notebook IDE

```
1 pd.  version
```

```
1 Output >>>  '0.24.2'
```

Series is similar to **python list** but series have additional functionality, methods, and operators, because of these series is advanced than a list.

Methods of Creating a Series

1. Creating series from list

but first, we are creating a list

```
list_1 = [1, 2, -3, 4.5, 'indian']
print(list 1)
```

```
Output >>>   [1, 2, -3, 4.5, 'indian']
```

Python list stores int, float, string data types

Creating series using the above list

```
series1 = pd.Series(list_1)
print(series1)
```

```
Output >>>
          0         1
          1         2
          2        -3
          3       4.5
          4    indian
          dtype: object
```

Here it is showing **0 1 2 3 4** is index and **1 2 -3 4.5** Indian are data values.

```
type(series1)
```

```
Output >>>   pandas.core.series.Series
```

pandas.core.series.Series means series is a one-dimensional array, which can store indexed data

2. Creating Empty Series

Empty series is like an empty list, we can create empty series using an empty list

```
empty_s = pd.Series([])
print(empty s)
```

```
Output >>>   Series([], dtype: float64)
```

3. Creating Series using a different method

List inside the series

```
series2 = pd.Series([1,2,3,4,5])
print(series2)
```

```
Output >>>
          0    1
          1    2
          2    3
          3    4
          4    5
          dtype: int64
```

in index parameter, default index is start from 0 to n (0,1,2,….n) when index is not identified

Here we are creating series with the index parameter

Index length should have equal to the number of data values, otherwise, it shows error

```
series2 = pd.Series([1,2,3,4,5], index = ['a', 'b', 'c'])
print(series2)
```

```
Output >>>
---------------------------------------------------------------
ValueError                                Traceback (most recent
```

```
<ipython-input-11-c6475a37a2e3> in <module>
----> 1 series2 = pd.Series([1,2,3,4,5], index = ['a', 'b', 'c']
      2 print(series2)

C:\ProgramData\Anaconda3\lib\site-packages\pandas\core\series.py
    247                                 'Length of passed values is
    248                                 'index implies {ind}'
--> 249                                 .format(val=len(data), ind=l
    250                 except TypeError:
    251                     pass

ValueError: Length of passed values is 5, index implies 3
```

ValueError: Length of passed value is 5, index implies 3

We got an error because we passed 3 indexes for 5 data values

```
series2 = pd.Series([1,2,3,4,5], index = ['a', 'b', 'c', 'd', 'e'
print(series2)
```

```
Output >>>
          a    1
          b    2
          c    3
          d    4
          e    5
          dtype: int64
```

We can change index to any numbers, alphabates, names etc.

Above you can see **dtype: int64**, this means our data type has stored in integer 64 bit.

we can change the data type of series

Changing data type of series (Convert int into a float)

```
series2 = pd.Series([1,2,3,4,5], index = ['a', 'b', 'c', 'd', 'e'
print(series2)
```

```
Output >>>
          a    1.0
          b    2.0
          c    3.0
          d    4.0
          e    5.0
          dtype: float64
```

4. Creating series from scalar values

scalar values means single value

e.g. 1, 0.5, ‘indian’

```
s3_scalar = pd.Series(2)
print(s3 scalar)
```

```
Output >>>
          0    2
          dtype: int64
```

for more data values index should be needed.

```
s3_scalar = pd.Series(2, index = [1,2,3,4,5])
print(s3 scalar)
```

```
Output >>>
          1    2
          2    2
          3    2
          4    2
          5    2
          dtype: int64
```

5. Creating series from python dictionary

```
s4_dict = pd.Series({'a':1, 'b':2, 'c':3})
print(s4 dict)
```

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

Accessing element from series

Pandas Series supports most Python functions.

Now, we are accessing element from series2

```
print(series2)
```

```
Output >>>
          a    1.0
          b    2.0
          c    3.0
          d    4.0
          e    5.0
          dtype: float64
```

We can access any value or data from series by putting index value

```
series2[3]
```

```
Output >>>
          4.0
```

```
series2[4]
```

```
Output >>>
          5.0
```

Slicing series

Here we are slicing series with index value 1 to 4 that means 1 is inclusive(it can be taken) and 4 is exclusive(it can be not taken)

```
series2[1:4]
```

```
Output >>>
          b    2.0
          c    3.0
          d    4.0
          dtype: float64
```

series can be done by using mathematical operators

Adding two serieses

```
s5 = pd.Series([1,2,3,4,5])
s6 = pd.Series([1,2,3,4,5])

a = s5 + s6
print(a)
```

```
Output >>>
          0     2
          1     4
          2     6
          3     8
          4    10
```

```
dtype: int64
```

we can also add series using add method

```
s5.add(s6)
```

```
Output >>>
0     2
1     4
2     6
3     8
4    10
dtype: int64
```

min() operator gives minimum value of particular series

```
min(a)
```

```
Output >>>   2
```

max() operator gives maximum value

```
max(a)
```

```
Output >>>   10
```

Conditional operator

If you want to print less than 8 values

```
a[a < 8]
```

```
Output >>>
0    2
```

```
1    4
2    6
dtype: int64
```

Using **drop()** function we can eliminate any index value

```
a.drop(4)
```

```
Output >>>
0    2
1    4
2    6
3    8
dtype: int64
```

Now we are printing series6 (s6)

```
print(s6)
```

```
Output >>>
0    1
1    2
2    3
3    4
4    5
dtype: int64
```

```
s7 = pd.Series([1,2,3])
print(s7)
```

```
Output >>>
0    1
1    2
2    3
dtype: int64
```

Pandas have additional functions to fill missing values, it does not show an error when the value is missing. Missing values are shown by NaN.
See below example:

In pandas, we can add the unequal data values series. Here series s6 have 5 data values and s7 have 3 data values, when we perform addition operation it adds successfully

```
s6 + s7
```

```
Output >>>
          0    2.0
          1    4.0
          2    6.0
          3    NaN
          4    NaN
          dtype: float64
```

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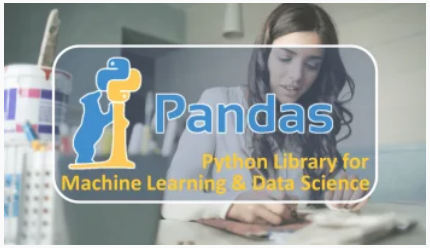

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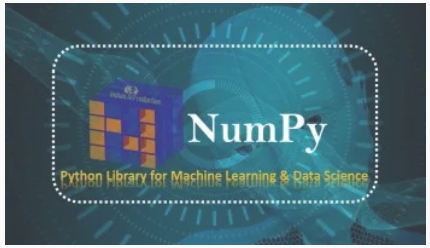

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