1- What is Pandas

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0.1 What is Pandas:

- Powerful Python toolkit.

0.2 Pandas Data Structure:

- `Series`:
  - One dimensional
  - Homogenous Array
- `DataFrame`:
  - Two dimensional
  - Combination of multiple series
- `Panel`:
  - Three dimensional

[1]:
```
# Impoorting Pandas
import pandas as pd
```

[2]:
```
# Checking Pandas version
pd.__version__
```

[2]:
```
'2.2.2'
```

[3]:
```
list_s = [1, 2, -3, 6.2, 'data_values']
print (list_s)
```

```
[1, 2, -3, 6.2, 'data_values']
```

0.2.1 Creating Pandas Series:

[4]:
```
series1 = pd.Series(list_s)
print (series1)
```

```
0              1
1              2
2             -3
3            6.2
4    data_values
dtype: object
```

[5]:
```
print(type(series1))
```

```
<class 'pandas.core.series.Series'>
```

Creating Series with Scalar(Single) value:

[6]:
```
series= pd.Series(0.5)
print(series)
print(type(series))
```

```
0    0.5
dtype: float64
<class 'pandas.core.series.Series'>
```

[7]:
```
series0= pd.Series(0.5, index =['a','b','c'])
print(series0)
print(type(series0))
```

```
a    0.5
b    0.5
c    0.5
dtype: float64
<class 'pandas.core.series.Series'>
```

Creating Series with Tuple

[8]:
```
series1 = pd.Series((1,2,3,4))
print(series1)
print(type(series1))
```

```
0    1
1    2
2    3
3    4
dtype: int64
<class 'pandas.core.series.Series'>
```

Creating Series with List

- pd.Series , `S` should be capital in Series.

[9]:
```
series1 = pd.Series([1,2,3,4])
print(series1)
print(type(series1))
```

```
0    1
1    2
2    3
3    4
dtype: int64
<class 'pandas.core.series.Series'>
```

Creating Series witth Dictionary:

[10]:
```
dict_s = pd.Series({'name':'Jafri' , 'grade':'A1'})
print(dict_s)
print(type(dict_s))
```

```
name     Jafri
grade       A1
dtype: object
<class 'pandas.core.series.Series'>
```

Creating Empty Series:

[11]:
```
series_empty = pd.Series([])
print(series_empty)
print(type(series_empty))
```

```
Series([], dtype: object)
<class 'pandas.core.series.Series'>
```

Changing Default Index:

[12]:
```
series3 = pd.Series([1,2,3,4])
print(series3)
```

```
0    1
1    2
2    3
3    4
dtype: int64
```

[13]:
```
 # index value count should be same as series value count otherwise 'Value␣
 ↪Error'.
series4 = pd.Series([1,2,3,4], index = (['a','b','c', 'd']))
print(series4)
```

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

Changing Datatype:

[14]:
```
series4 = pd.Series ([1,2,3,4], index = ['a','b','c','d'], dtype = float)
print(series4)
```

```
a    1.0
b    2.0
c    3.0
d    4.0
dtype: float64
```

Giving Names to Datavalues in Series:

[15]:
```
series5 = pd.Series ([1,2,3,4], index = ['a','b','c','d'], dtype = float, name
 ↪= 'data value' )
print(series5)
```

```
a    1.0
b    2.0
c    3.0
d    4.0
Name: data value, dtype: float64
```