Python Chilla Pandas Assignment

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In [ ]:
```
import plotly.express as px
import pandas as pd
import numpy as np
import os
import matplotlib.pyplot as plt
from matplotlib.pyplot import figure
import seaborn as sns
```

In [ ]:
```
# adding all col and make mean in new col
df = pd.DataFrame(np.random.randn(10,4), columns=list('ABCD'))
df['average'] = df.mean(axis=1)
# other method
# df['average'] = df[['col1', 'col2']].mean(axis=1)
# col = df.loc[: , "col1":"col3"]
# df['mean'] = col.mean(axis=1)
df
```

Out[ ]:

	A	B	C	D	average
0	0.394691	-0.099034	1.221874	-0.034684	0.370712
1	0.618873	-1.062932	1.421820	0.947714	0.481369
2	-0.035818	0.714579	-0.759874	0.402847	0.080434
3	0.034415	-0.931410	0.049617	-0.153396	-0.250194
4	-0.312452	0.553099	1.468710	-0.653885	0.263868
5	-0.086214	-2.664909	-1.171882	-1.606185	-1.382297
6	-0.563718	-0.888630	0.337625	1.152865	0.009536
7	0.544186	-1.112088	0.047404	0.248578	-0.067980
8	0.044452	-0.103955	-0.215611	0.680726	0.101403
9	0.820109	-0.677758	-0.080284	-0.367010	-0.076236

Pakistan vs India Cereals, total production Data Plots and variation

In [ ]:
```
pak = pd.read_csv("D:/Python ka Chilla/python_chilla/data/production_faost_data_pak.csv
ind = pd.read_csv("D:/Python ka Chilla/python_chilla/data/production_faost_data_india.c
pak.head(3)
```

Out[ ]:

	Domain Code	Domain	Area Code	Area	Element Code	Element	Item Code	Item	Year Code	Year	Unit	Value
0	QCL	Crops and livestock products	165	Pakistan	5312	Area harvested	1717	Cereals, Total	1961	1961	ha	7858558
1	QCL	Crops and livestock products	165	Pakistan	5419	Yield	1717	Cereals, Total	1961	1961	hg/ha	8564
2	QCL	Crops and livestock products	165	Pakistan	5510	Production	1717	Cereals, Total	1961	1961	tonnes	6729680

Pakistan Data Analysis

In [ ]:
```
print(pak.info())
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 180 entries, 0 to 179
Data columns (total 14 columns):
 #   Column            Non-Null Count  Dtype 
---  ------            --------------  ----- 
 0   Domain Code       180 non-null    object
 1   Domain            180 non-null    object
 2   Area Code         180 non-null    int64 
 3   Area              180 non-null    object
 4   Element Code      180 non-null    int64 
 5   Element           180 non-null    object
 6   Item Code         180 non-null    int64 
 7   Item              180 non-null    object
 8   Year Code         180 non-null    int64 
 9   Year              180 non-null    int64 
 10  Unit              180 non-null    object
 11  Value             180 non-null    int64 
 12  Flag              180 non-null    object
 13  Flag Description  180 non-null    object
dtypes: int64(6), object(8)
memory usage: 19.8+ KB
None
```

In [ ]:
```
# drop all rows with Nan values
pak = pak.dropna()
pak.head()
```

Out[ ]:

	Domain Code	Domain	Area Code	Area	Element Code	Element	Item Code	Item	Year Code	Year	Unit	Value

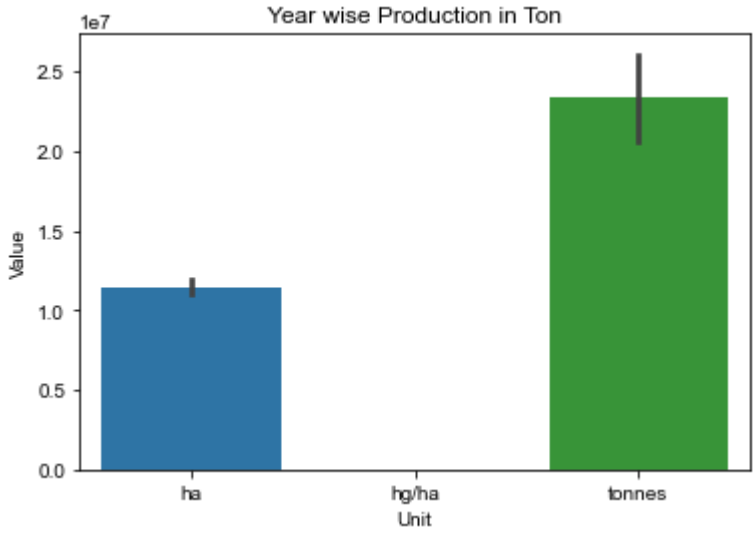
	Domain Code	Domain	Area Code	Area	Element Code	Element	Item Code	Item	Year Code	Year	Unit	Value
0	QCL	Crops and livestock products	165	Pakistan	5312	Area harvested	1717	Cereals, Total	1961	1961	ha	7858558
1	QCL	Crops and livestock products	165	Pakistan	5419	Yield	1717	Cereals, Total	1961	1961	hg/ha	8564
2	QCL	Crops and livestock products	165	Pakistan	5510	Production	1717	Cereals, Total	1961	1961	tonnes	6729680
3	QCL	Crops and livestock products	165	Pakistan	5312	Area harvested	1717	Cereals, Total	1962	1962	ha	8090856
4	QCL	Crops and livestock products	165	Pakistan	5419	Yield	1717	Cereals, Total	1962	1962	hg/ha	8580

In [ ]:
```
pak[pak['Value']>9000000].groupby(['Area', 'Item']).mean()
```

Out[ ]:

		Area Code	Element Code	Item Code	Year Code	Year	Value
Area	**Item**						
Pakistan	**Cereals, Total**	165.0	5410.074766	1717.0	1993.747664	1993.747664	1.856807e+07

In [ ]:
```
sns.barplot(x='Unit', y = "Value", data=pak, saturation=0.8)
sns.set_style('dark')
plt.title("Year wise Production in Ton")
plt.show()
```



In [ ]:
```
fig = px.pie(pak, values='Year', names='Flag', title='Pie Chart for The Crop Production
fig.show()
```

In [ ]:
```
pak.head(1)
```

Out[ ]:

	Domain Code	Domain	Area Code	Area	Element Code	Element	Item Code	Item	Year Code	Year	Unit	Value
0	QCL	Crops and livestock products	165	Pakistan	5312	Area harvested	1717	Cereals, Total	1961	1961.0	ha	7858558.0

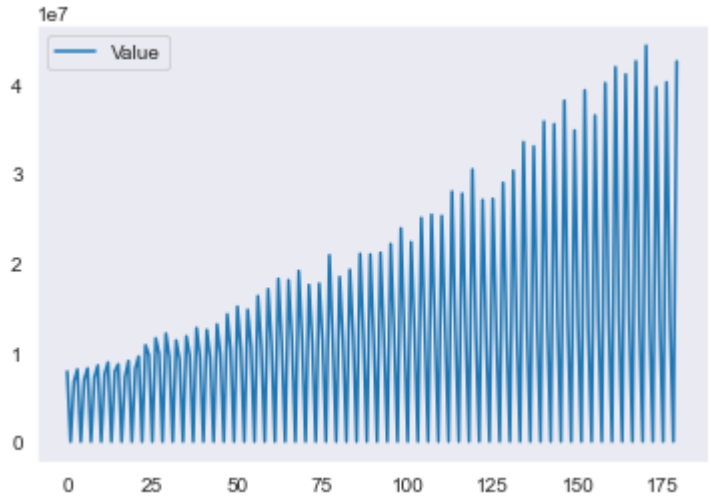
In [ ]:
```
fig = px.sunburst(pak, path=['Area', 'Item'], values='Value',
                  color='Year', hover_data=['Unit'])
fig.show()
```

In [ ]:
```
fig = px.bar(pak, x="Element", y="Value", color="Unit",
             pattern_shape="Unit", pattern_shape_sequence=[".", "x", "+"])
fig.show()
```

In [ ]:
```
# plots for individual crops
pak['Value'] = pak['Value'].astype(float)
pak['Year'] = pak['Year'].astype(float)
pak['Value'].plot()

plt.legend(loc='upper left')
```

Out[ ]:
```
<matplotlib.legend.Legend at 0x116d3efc7f0>
```



In [ ]:
```
# checking columns of dataframe
print(pak.columns)
```

```
Index(['Domain Code', 'Domain', 'Area Code', 'Area', 'Element Code', 'Element',
       'Item Code', 'Item', 'Year Code', 'Year', 'Unit', 'Value', 'Flag',
       'Flag Description'],
      dtype='object')
```

Kashti Dataset Usecase

In [ ]:
```
df = sns.load_dataset('titanic')
df.head(2)
```

Out[ ]:

	survived	pclass	sex	age	sibsp	parch	fare	embarked	class	who	adult_male	deck	e
0	0	3	male	22.0	1	0	7.2500	S	Third	man	True	NaN	S
1	1	1	female	38.0	1	0	71.2833	C	First	woman	False	C	

In [ ]:
```
df.to_csv('D:/Python ka Chilla/python_chilla/data/titanic', index=False)
```

In [ ]:
```
dff = df.drop(['sibsp', 'embarked'], axis=1)
dff.head()
```

Out[ ]:

	survived	pclass	sex	age	parch	fare	class	who	adult_male	deck	embark_town	alive
0	0	3	male	22.0	0	7.2500	Third	man	True	NaN	Southampton	no
1	1	1	female	38.0	0	71.2833	First	woman	False	C	Cherbourg	yes
2	1	3	female	26.0	0	7.9250	Third	woman	False	NaN	Southampton	yes
3	1	1	female	35.0	0	53.1000	First	woman	False	C	Southampton	yes
4	0	3	male	35.0	0	8.0500	Third	man	True	NaN	Southampton	no

In [ ]:
```
dff.describe()
```

Out[ ]:

	survived	pclass	age	parch	fare
count	891.000000	891.000000	714.000000	891.000000	891.000000
mean	0.383838	2.308642	29.699118	0.381594	32.204208
std	0.486592	0.836071	14.526497	0.806057	49.693429
min	0.000000	1.000000	0.420000	0.000000	0.000000
25%	0.000000	2.000000	20.125000	0.000000	7.910400
50%	0.000000	3.000000	28.000000	0.000000	14.454200
75%	1.000000	3.000000	38.000000	0.000000	31.000000
max	1.000000	3.000000	80.000000	6.000000	512.329200

In [ ]:
```
dff.mean()
```

Out[ ]:
```
survived       0.383838
pclass         2.308642
age           29.699118
parch          0.381594
fare          32.204208
adult_male     0.602694
alone          0.602694
dtype: float64
```

In [ ]:
```
dff.value_counts(['survived'])
```

Out[ ]:
```
survived
0           549
1           342
dtype: int64
```

In [ ]:
```
# dff.groupby(['sex', 'class']).mean()
dff.groupby(['sex']).mean()
```

Out[ ]:
```
<pandas.core.groupby.generic.DataFrameGroupBy object at 0x000001F8078D9C18>
```

In [ ]:
```
dff[dff['age']>18].groupby(['sex', 'class']).mean()
```

Out[ ]:

		survived	pclass	age	parch	fare	adult_male	alone
sex	**class**							
female	**First**	0.972973	1.0	37.500000	0.418919	105.043469	0.0	0.418919
	Second	0.900000	2.0	33.158333	0.500000	21.224653	0.0	0.466667
	Third	0.423729	3.0	30.161017	0.983051	14.785453	0.0	0.440678
male	**First**	0.375000	1.0	42.901042	0.270833	68.877389	1.0	0.562500

sex	class	survived	pclass	age	parch	fare	adult_male	alone
	Second	0.071429	2.0	34.750000	0.154762	20.219593	1.0	0.678571
	Third	0.133663	3.0	30.366337	0.099010	10.022624	1.0	0.851485

In [ ]: