Participant

Title= "Matric Student"

Name= "Muhammad Bin Saqib Ali"

email = "muhammad.saqib8761@gmail.com"

whatsapp = "00923470159155"

PANDAS CASE STUDY

Importing libraries

In [ ]:
```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

Importing Data

In [ ]:
```python
data = pd.read_csv ("sugar_cane.csv")
data.head (5)
```

Out [ ]:

	Domain Code	Domain	Area Code	Area	Element Code	Element	Item Code	Item	Year Code	Year	Unit
0	QCL	Crops and livestock products	100	India	5510	Production	156	Sugar cane	1961	1961	tonnes
1	QCL	Crops and livestock products	165	Pakistan	5510	Production	156	Sugar cane	1961	1961	tonnes
2	QCL	Crops and livestock products	100	India	5510	Production	156	Sugar cane	1962	1962	tonnes
3	QCL	Crops and livestock products	165	Pakistan	5510	Production	156	Sugar cane	1962	1962	tonnes
4	QCL	Crops and livestock products	100	India	5510	Production	156	Sugar cane	1963	1963	tonnes

Saving Data in our Folder

In [ ]:
```
data.to_csv ("1234")
```

To Check Summary of Data

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

Out [ ]:

	Area Code	Element Code	Item Code	Year Code	Year	Value	Flag
count	120.000000	120.0	120.0	120.000000	120.000000	1.200000e+02	0.0
mean	132.500000	5510.0	156.0	1990.500000	1990.500000	1.328532e+08	NaN
std	32.636269	0.0	0.0	17.390715	17.390715	1.136199e+08	NaN
min	100.000000	5510.0	156.0	1961.000000	1961.000000	1.164000e+07	NaN
25%	100.000000	5510.0	156.0	1975.750000	1975.750000	3.778810e+07	NaN
50%	132.500000	5510.0	156.0	1990.500000	1990.500000	8.762287e+07	NaN
75%	165.000000	5510.0	156.0	2005.250000	2005.250000	2.261844e+08	NaN
max	165.000000	5510.0	156.0	2020.000000	2020.000000	4.054162e+08	NaN

Droping few **Columns**

In [ ]:
```
new_data= data.drop(['Area Code','Domain Code', 'Element Code','Flag',"Iten
new_data.head (5)
```

Out[ ]:

	Domain	Area	Element	Item	Year Code	Year	Unit	Value	Flag Description
0	Crops and livestock products	India	Production	Sugar cane	1961	1961	tonnes	110001008	Official data
1	Crops and livestock products	Pakistan	Production	Sugar cane	1961	1961	tonnes	11640000	Official data
2	Crops and livestock products	India	Production	Sugar cane	1962	1962	tonnes	103967008	Official data
3	Crops and livestock products	Pakistan	Production	Sugar cane	1962	1962	tonnes	14356700	Official data
4	Crops and livestock products	India	Production	Sugar cane	1963	1963	tonnes	91913008	Official data

By this we can see the columns of our DataFrame

In [ ]:
```
new_data.columns
```

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

It help us to show top Data of our DataFrame

In [ ]:
```
new_data.head(5)
```

Out[ ]:

	Domain	Area	Element	Item	Year Code	Year	Unit	Value	Flag Description
0	Crops and livestock products	India	Production	Sugar cane	1961	1961	tonnes	110001008	Official data
1	Crops and livestock products	Pakistan	Production	Sugar cane	1961	1961	tonnes	11640000	Official data
2	Crops and livestock products	India	Production	Sugar cane	1962	1962	tonnes	103967008	Official data
3	Crops and livestock products	Pakistan	Production	Sugar cane	1962	1962	tonnes	14356700	Official data
4	Crops and livestock products	India	Production	Sugar cane	1963	1963	tonnes	91913008	Official data

By this we can group 2 Columns and Analize them

In [ ]:
```python
new_data.groupby (["Year", "Value"]).mean ()
```

Out[ ]:

Year	Value	Year Code
1961	11640000	1961.0
	110001008	1961.0
1962	14356700	1962.0
	103967008	1962.0
1963	18438000	1963.0
...	...	...
2018	379904850	2018.0
2019	66379581	2019.0
	405416180	2019.0
2020	81009261	2020.0
	370500000	2020.0

120 rows × 1 columns

By this we can see that how many times a value is repeated or available in our DataFrame

In [ ]:
```
new_data.value_counts (["Year"])
```

Out[ ]:
```
Year
1961    2
1962    2
1993    2
1994    2
1995    2
1996    2
1997    2
1998    2
1999    2
2000    2
2001    2
2002    2
2003    2
2004    2
2005    2
2006    2
2007    2
2008    2
2009    2
2010    2
2011    2
2012    2
2013    2
2014    2
2015    2
2016    2
2017    2
2018    2
2019    2
1992    2
1991    2
1990    2
1975    2
1963    2
1964    2
1965    2
1966    2
1967    2
1968    2
1969    2
1970    2
1971    2
1972    2
1973    2
1974    2
1976    2
1989    2
1977    2
```

```
1978    2
1979    2
1980    2
1981    2
1982    2
1983    2
1984    2
1985    2
1986    2
1987    2
1988    2
2020    2
dtype: int64
```

In [ ]:

By this we can set a specific value from where we have to see our data

In [ ]:
```
new_data [new_data ["Year"]>2000]
```

Out[ ]:

	Domain	Area	Element	Item	Year Code	Year	Unit	Value	Flag Description
80	Crops and livestock products	India	Production	Sugar cane	2001	2001	tonnes	295956000	Official data
81	Crops and livestock products	Pakistan	Production	Sugar cane	2001	2001	tonnes	43606300	Official data
82	Crops and livestock products	India	Production	Sugar cane	2002	2002	tonnes	297207808	Official data
83	Crops and livestock products	Pakistan	Production	Sugar cane	2002	2002	tonnes	48041600	Official data
84	Crops and livestock products	India	Production	Sugar cane	2003	2003	tonnes	287383200	Official data
85	Crops and livestock products	Pakistan	Production	Sugar cane	2003	2003	tonnes	52055800	Official data
	Crops and			Sugar					

86	livestock products	India	Production	cane	2004	2004	tonnes	233861792	Official data
87	Crops and livestock products	Pakistan	Production	Sugar cane	2004	2004	tonnes	53820000	Official data
88	Crops and livestock products	India	Production	Sugar cane	2005	2005	tonnes	237088400	Official data
89	Crops and livestock products	Pakistan	Production	Sugar cane	2005	2005	tonnes	47244100	Official data
90	Crops and livestock products	India	Production	Sugar cane	2006	2006	tonnes	281171808	Official data
91	Crops and livestock products	Pakistan	Production	Sugar cane	2006	2006	tonnes	44665500	Official data
92	Crops and livestock products	India	Production	Sugar cane	2007	2007	tonnes	355519712	Official data
93	Crops and livestock products	Pakistan	Production	Sugar cane	2007	2007	tonnes	54741600	Official data
94	Crops and livestock products	India	Production	Sugar cane	2008	2008	tonnes	348187904	Official data
95	Crops and livestock products	Pakistan	Production	Sugar cane	2008	2008	tonnes	63920000	Official data
96	Crops and livestock products	India	Production	Sugar cane	2009	2009	tonnes	285029312	Official data
97	Crops and livestock products	Pakistan	Production	Sugar cane	2009	2009	tonnes	50045400	Official data
98	Crops and livestock products	India	Production	Sugar cane	2010	2010	tonnes	292301600	Official data

99	Crops and livestock products	Pakistan	Production	Sugar cane	2010	2010	tonnes	49372900	Official data
100	Crops and livestock products	India	Production	Sugar cane	2011	2011	tonnes	342382016	Official data
101	Crops and livestock products	Pakistan	Production	Sugar cane	2011	2011	tonnes	55308500	Official data
102	Crops and livestock products	India	Production	Sugar cane	2012	2012	tonnes	361036992	Official data
103	Crops and livestock products	Pakistan	Production	Sugar cane	2012	2012	tonnes	58397000	Official data
104	Crops and livestock products	India	Production	Sugar cane	2013	2013	tonnes	341200000	Official data
105	Crops and livestock products	Pakistan	Production	Sugar cane	2013	2013	tonnes	67460094	Official data
106	Crops and livestock products	India	Production	Sugar cane	2014	2014	tonnes	352142000	Official data
107	Crops and livestock products	Pakistan	Production	Sugar cane	2014	2014	tonnes	62826458	Official data
108	Crops and livestock products	India	Production	Sugar cane	2015	2015	tonnes	362333000	Official data
109	Crops and livestock products	Pakistan	Production	Sugar cane	2015	2015	tonnes	65482334	Official data
110	Crops and livestock products	India	Production	Sugar cane	2016	2016	tonnes	348448000	Official data
	Crops and			Sugar					

111	livestock products	Pakistan	Production	cane	2016	2016	tonnes	75482253	Official data
112	Crops and livestock products	India	Production	Sugar cane	2017	2017	tonnes	306069000	Official data
113	Crops and livestock products	Pakistan	Production	Sugar cane	2017	2017	tonnes	83332740	Official data
114	Crops and livestock products	India	Production	Sugar cane	2018	2018	tonnes	379904850	Official data
115	Crops and livestock products	Pakistan	Production	Sugar cane	2018	2018	tonnes	67173975	Official data
116	Crops and livestock products	India	Production	Sugar cane	2019	2019	tonnes	405416180	Official data
117	Crops and livestock products	Pakistan	Production	Sugar cane	2019	2019	tonnes	66379581	Official data
118	Crops and livestock products	India	Production	Sugar cane	2020	2020	tonnes	370500000	Official data
119	Crops and livestock products	Pakistan	Production	Sugar cane	2020	2020	tonnes	81009261	Official data

We can also Use many Functions in 1 Statement

```
In [ ]: new_data [new_data ["Year"]>2000].groupby (["Year", "Value"]).mean ()
```

Out[ ]:

Year	Value	Year Code
2001	**43606300**	2001.0
	295956000	2001.0
2002	**48041600**	2002.0
	297207808	2002.0

2003	**52055800**	2003.0
	287383200	2003.0
2004	**53820000**	2004.0
	233861792	2004.0
2005	**47244100**	2005.0
	237088400	2005.0
2006	**44665500**	2006.0
	281171808	2006.0
2007	**54741600**	2007.0
	355519712	2007.0
2008	**63920000**	2008.0
	348187904	2008.0
2009	**50045400**	2009.0
	285029312	2009.0
2010	**49372900**	2010.0
	292301600	2010.0
2011	**55308500**	2011.0
	342382016	2011.0
2012	**58397000**	2012.0
	361036992	2012.0
2013	**67460094**	2013.0
	341200000	2013.0
2014	**62826458**	2014.0
	352142000	2014.0
2015	**65482334**	2015.0
	362333000	2015.0
2016	**75482253**	2016.0
	348448000	2016.0
2017	**83332740**	2017.0
	306069000	2017.0
2018	**67173975**	2018.0
	379904850	2018.0
2019	**66379581**	2019.0
	405416180	2019.0

2020	**81009261**	2020.0
	370500000	2020.0

In [ ]: