6511286_JanPoonthong_541_W3_Assignment

July 2, 2023

[3]:
```
import pandas as pd
import matplotlib.pyplot as plt
```

[7]:
```
df = pd.read_csv("WorldBank_GDP.csv")
df
```

[7]:

	Country Name	Country Code	Indicator Name	Year	GDP
0	China	CHN	GDP (current US$)	2010	6.087160e+12
1	Germany	DEU	GDP (current US$)	2010	3.417090e+12
2	Japan	JPN	GDP (current US$)	2010	5.700100e+12
3	United States	USA	GDP (current US$)	2010	1.499210e+13
4	China	CHN	GDP (current US$)	2011	7.551500e+12
5	Germany	DEU	GDP (current US$)	2011	3.757700e+12
6	Japan	JPN	GDP (current US$)	2011	6.157460e+12
7	United States	USA	GDP (current US$)	2011	1.554260e+13
8	China	CHN	GDP (current US$)	2012	8.532230e+12
9	Germany	DEU	GDP (current US$)	2012	3.543980e+12
10	Japan	JPN	GDP (current US$)	2012	6.203210e+12
11	United States	USA	GDP (current US$)	2012	1.619700e+13
12	China	CHN	GDP (current US$)	2012	8.532230e+12
13	Germany	DEU	GDP (current US$)	2012	3.543980e+12
14	Japan	JPN	GDP (current US$)	2012	6.203210e+12
15	United States	USA	GDP (current US$)	2012	1.619700e+13
16	China	CHN	GDP (current US$)	2013	9.570410e+12
17	Germany	DEU	GDP (current US$)	2013	3.752510e+12
18	Japan	JPN	GDP (current US$)	2013	5.155720e+12
19	United States	USA	GDP (current US$)	2013	1.678480e+13
20	China	CHN	GDP (current US$)	2014	1.043850e+13
21	Germany	DEU	GDP (current US$)	2014	3.898730e+12
22	Japan	JPN	GDP (current US$)	2014	4.850410e+12
23	United States	USA	GDP (current US$)	2014	1.752170e+13
24	China	CHN	GDP (current US$)	2015	1.101550e+13
25	Germany	DEU	GDP (current US$)	2015	3.381390e+12
26	Japan	JPN	GDP (current US$)	2015	4.389480e+12
27	United States	USA	GDP (current US$)	2015	1.821930e+13
28	China	CHN	GDP (current US$)	2016	1.113790e+13
29	Germany	DEU	GDP (current US$)	2016	3.495160e+12
30	Japan	JPN	GDP (current US$)	2016	4.926670e+12

```
31  United States          USA  GDP (current US$)  2016  1.870720e+13
32          China          CHN  GDP (current US$)  2017  1.214350e+13
33        Germany          DEU  GDP (current US$)  2017  3.693200e+12
34          Japan          JPN  GDP (current US$)  2017  4.859950e+12
35  United States          USA  GDP (current US$)  2017  1.948540e+13
36          China          CHN  GDP (current US$)  2018  1.360820e+13
37        Germany          DEU  GDP (current US$)  2018  3.996760e+12
38          Japan          JPN  GDP (current US$)  2018  4.970920e+12
39  United States          USA  GDP (current US$)  2018  2.049410e+13
```

1 Ex 1

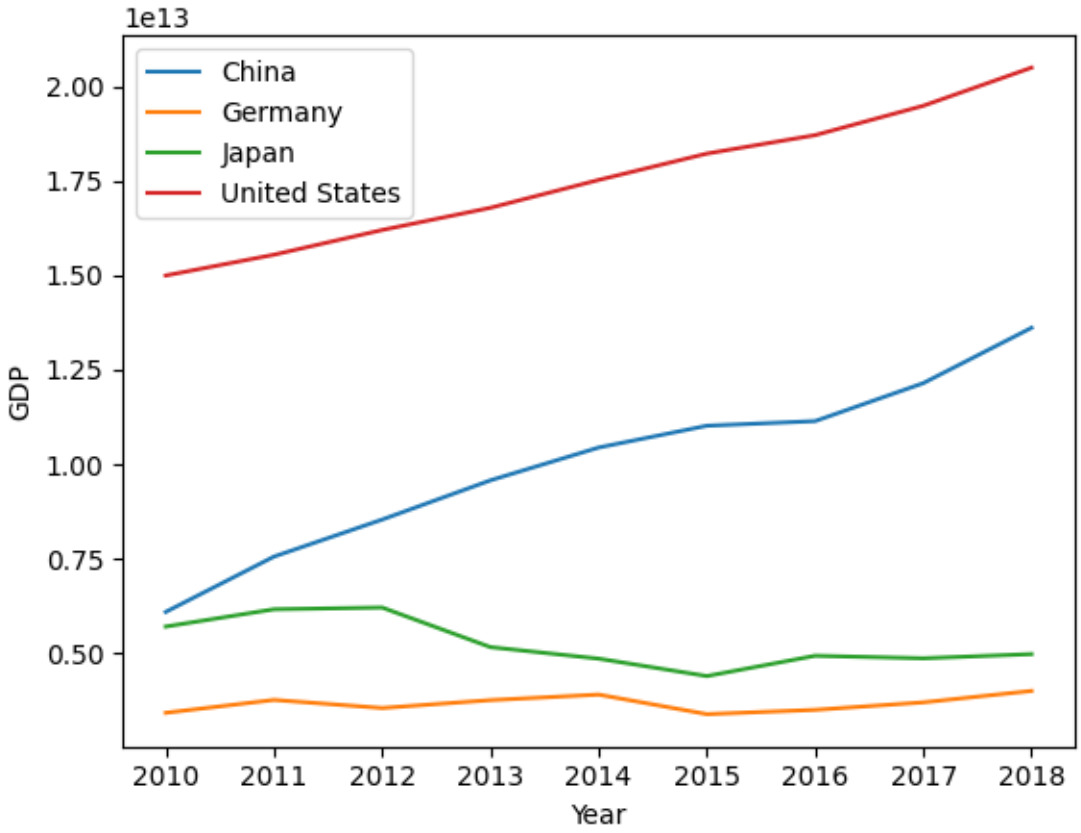
[88]:
```
year_2018_and_2010 = df[(df['Year'] >= 2010) & df["Year"] <= 2018]


grouped_df = year_2018_and_2010.groupby('Country Name')

for name, group in grouped_df:
    plt.plot(group['Year'], group['GDP'], label=name)

plt.legend()
plt.xlabel('Year')
plt.ylabel("GDP")
```

[88]:
```
Text(0, 0.5, 'GDP')
```



The countried with growing GDP are China and United States, as indicated by the upward trends on the graph

[17]:
```
temperature = pd.read_csv("temperatures.csv", index_col=0)
temperature
```

[17]:

	date	city	country	avg_temp_c
0	2000-01-01	Abidjan	Côte D'Ivoire	27.293
1	2000-02-01	Abidjan	Côte D'Ivoire	27.685
2	2000-03-01	Abidjan	Côte D'Ivoire	29.061
3	2000-04-01	Abidjan	Côte D'Ivoire	28.162
4	2000-05-01	Abidjan	Côte D'Ivoire	27.547
…	…	…	…	…
16495	2013-05-01	Xian	China	18.979
16496	2013-06-01	Xian	China	23.522
16497	2013-07-01	Xian	China	25.251
16498	2013-08-01	Xian	China	24.528
16499	2013-09-01	Xian	China	NaN

[16500 rows x 4 columns]

2 Ex 2

[35]:
```
temperature[temperature['avg_temp_c']==temperature['avg_temp_c'].max()]
```

[35]:
```
           date     city country  avg_temp_c
996  2000-07-01  Baghdad    Iraq      38.283
```

3 Ex 3

[41]:
```
temperature[(temperature.avg_temp_c >= 20) & (temperature.avg_temp_c <=␣
↪30)][['country', 'avg_temp_c']]
```

[41]:
```
             country  avg_temp_c
0      Côte D'Ivoire      27.293
1      Côte D'Ivoire      27.685
2      Côte D'Ivoire      29.061
3      Côte D'Ivoire      28.162
4      Côte D'Ivoire      27.547
…                …           …
16485          China      24.646
16486          China      23.885
16496          China      23.522
16497          China      25.251
16498          China      24.528

[8511 rows x 2 columns]
```

[42]:
```
temperature[(temperature.avg_temp_c >= 20) & (temperature.avg_temp_c <=␣
↪30)][['country', 'avg_temp_c']].shape
```

[42]:
```
(8511, 2)
```

4 Ex 4

[46]:
```
thailand = temperature[temperature['country'] == 'Thailand']
thailand
```

[46]:
```
            date     city   country  avg_temp_c
1320  2000-01-01  Bangkok  Thailand      25.980
1321  2000-02-01  Bangkok  Thailand      26.564
1322  2000-03-01  Bangkok  Thailand      28.626
1323  2000-04-01  Bangkok  Thailand      28.881
1324  2000-05-01  Bangkok  Thailand      28.978
…            …        …         …           …
1480  2013-05-01  Bangkok  Thailand      30.927
1481  2013-06-01  Bangkok  Thailand      28.771
1482  2013-07-01  Bangkok  Thailand      28.155
```

```
1483  2013-08-01  Bangkok  Thailand      28.351
1484  2013-09-01  Bangkok  Thailand         NaN

[165 rows x 4 columns]
```

[49]:
```
during_year_thailand = thailand[(thailand['date'] >= "2005-01-01") &␣
  ↪(thailand['date'] <= "2010-01-01")]
print(f"The avg. temp of Thailand during 2005-2010 is␣
  ↪{round(during_year_thailand['avg_temp_c'].mean(), 2)} Celsius")
```

```
The avg. temp of Thailand during 2005-2010 is 27.76 Celsius
```