Exploring Weather Trends

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step 1 :

- **Write a SQL query to extract the city level data. Export to CSV.**

```
1    SELECT * FROM city_data
2    WHERE city = 'Riyadh'
```

- **Write a SQL query to extract the global data. Export to CSV.**

```
1    SELECT * FROM global_data
```

step 2 :

- **Open up the CSV**

  in this step, I opened the CSV files using excel

  I face up empty record the temp_avg so, I fill it up with the mean of the existing values.

	A	B	C	D
year		city	country	avg_temp
	1843	Riyadh	Saudi Arabia	24.74
	1844	Riyadh	Saudi Arabia	15.45
	1845	Riyadh	Saudi Arabia	20.82
	1846	Riyadh	Saudi Arabia	
	1847	Riyadh	Saudi Arabia	
	1848	Riyadh	Saudi Arabia	24.56
	1849	Riyadh	Saudi Arabia	24.8

year	city	country	avg_temp
1843	Riyadh	Saudi Arabia	24.74
1844	Riyadh	Saudi Arabia	15.45
1845	Riyadh	Saudi Arabia	20.82
1846	Riyadh	Saudi Arabia	25.21
1847	Riyadh	Saudi Arabia	25.21
1848	Riyadh	Saudi Arabia	24.56
1849	Riyadh	Saudi Arabia	24.8

Then I have adjust and combine the two table manually in excel and prepare it to plot a line chart.

	A	B	C
1	year	riyadh_avg_temp	global_avg_temp
2	1843	24.74	8.17
3	1844	15.45	7.65
4	1845	20.82	7.85
5	1846	25.21	8.55
6	1847	25.21	8.09
7	1848	24.56	7.98
8	1849	24.8	7.98
9	1850	24.34	7.9
10	1851	25.03	8.18

table after the changes.

after that, I calculated the moving average for 10 years for both Riyadh and global temperature using the formula in the box below.

`=ROUND(AVERAGE(B2:B11);2)`

	A	B	C	D	E
1	year	riyadh_avg_temp	global_avg_temp	riyadh_10y_ma	global_10y_ma
2	1843	24.74	8.17		
3	1844	15.45	7.65		
4	1845	20.82	7.85		
5	1846	25.21	8.55		
6	1847	25.21	8.09		
7	1848	24.56	7.98		
8	1849	24.8	7.98		
9	1850	24.34	7.9		
10	1851	25.03	8.18		
11	1852	24.85	8.1		
12	1853	24.93	8.04	23.5	8.05
13	1854	24.72	8.21	23.52	8.03
14	1855	24.92	8.11	24.45	8.09
15	1856	24.57	8	24.86	8.11
16	1857	24.26	7.76	24.79	8.06
17	1858	25.01	8.1	24.7	8.03
18	1859	24.95	8.25	24.74	8.04

step 3: Create a line chart

I have done this step by using python specifically using seaborn library.

```python
import pandas as pd
pd.plotting.register_matplotlib_converters()
import matplotlib.pyplot as plt
%matplotlib inline
import seaborn as sns

df = pd.read_csv('/content/riyadh_global_data.csv', index_col="year")

plt.figure(figsize=(7,6))
plt.title('Riyadh vs. global average temperature')
sns.lineplot(data=df['riyadh_10y_ma'], label='Riyadh temp')
sns.lineplot(data=df['global_10y_ma'], label='Global temp')
plt.ylabel('Average temperature')
```


Riyadh vs. global average temperature
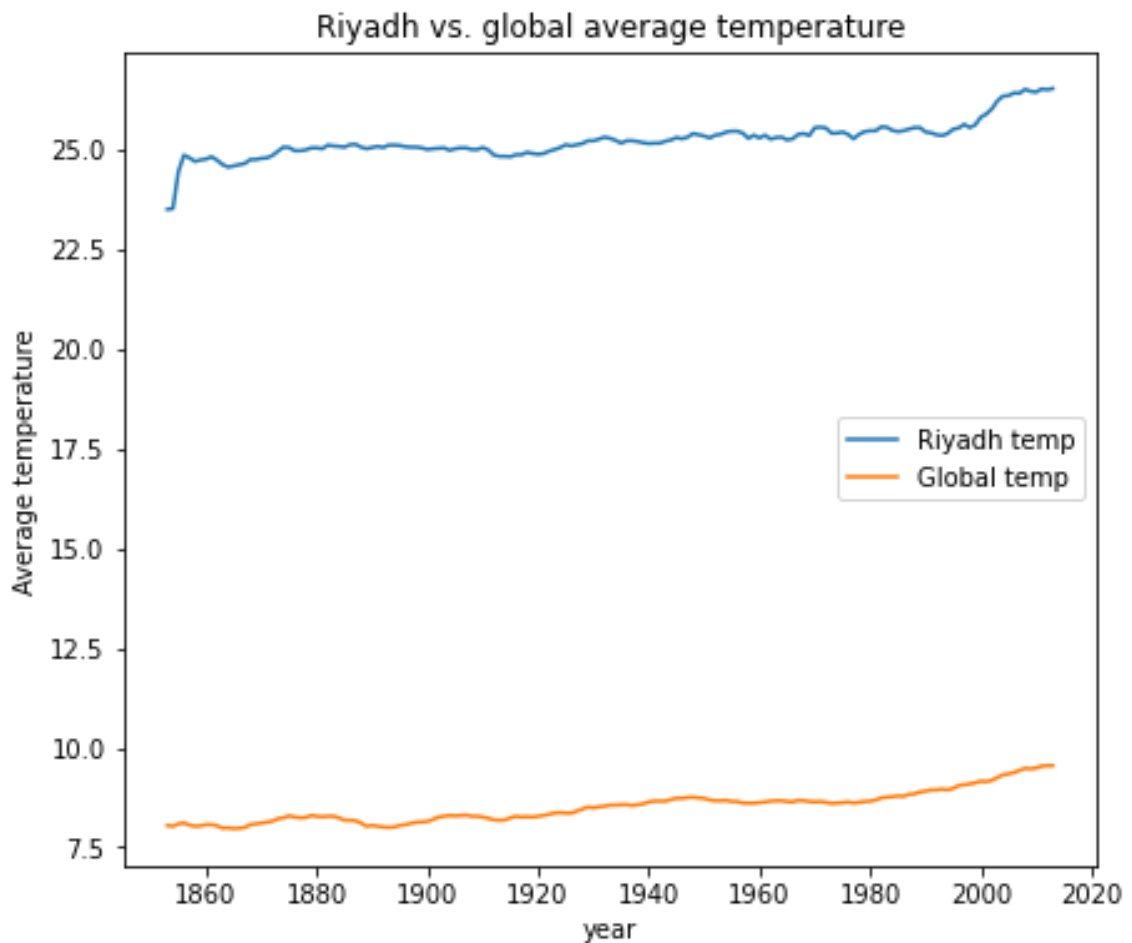
step 4:

- **Make observations** about the similarities and differences between the world averages and your city's averages, as well as overall trends. Here are some questions to get you started.

    - Is your city hotter or cooler on average compared to the global average? Has the difference been consistent over time?

      My city is way hotter than the global average and it did not approach it over time.

    - "How do the changes in your city's temperatures over time compare to the changes in the global average?"

      It both similar in that both averages tend to increase over time.

    - What does the overall trend look like? Is the world getting hotter or cooler? Has the trend been consistent over the last few hundred years?

      By looking at the chart you notice that the world is getting become hotter slightly.

    - In the last 10 years, the average temperature of Riyadh city has increased dramatically from the previous years.