Exploring Weather Trends - Project Instructions

Summary

In this project, you will analyze local and global temperature data and compare the temperature trends where you live to overall global temperature trends.

Instructions

Your goal will be to create a visualization and prepare a write up describing the similarities and differences between global temperature trends and temperature trends in the closest big city to where you live.

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Summary

Analyze local and global temperature data and compare the temperature trends where you live to overall global temperature trends.

Prep Data

In [1]:
```
# Import Libraries
import pandas as pd
import seaborn as sns
```

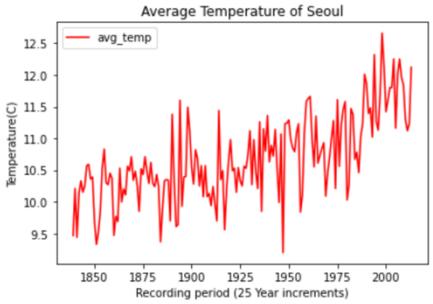
In [2]:
```
# Import Data
seoul_temp = pd.read_csv('seoul data.csv')
```

In [3]:
```
global_temp = pd.read_csv('global.csv')
```

In [4]:
```
# Check data count
seoul_temp.count()
```

Out[4]:
```
avg_temp    175
city        175
country     175
year        175
dtype: int64
```

In [20]:
```
#Explore seoul_temp data
seoul_temp.plot.line(x = 'year', y ='avg_temp', color = 'red', title = 'Average Temperature of Seoul', xlabel = 'Rec
```



In [5]:
```
#Check data count
global_temp.count()
```

Out[5]:
```
year        266
avg_temp    266
dtype: int64
```

Inspect Data

Make observations about the similarities and differences between the world averages and your city's averages, as well as overall trends.

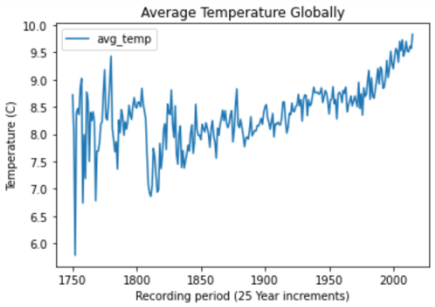
In [40]:
```
seoul_temp.avg_temp.describe()
```

Out[40]:
```
count    175.000000
mean      10.684800
std        0.680143
min        9.200000
25%       10.250000
50%       10.560000
75%       11.155000
max       12.660000
Name: avg_temp, dtype: float64
```

In [41]:
```
global_temp.avg_temp.describe()
```

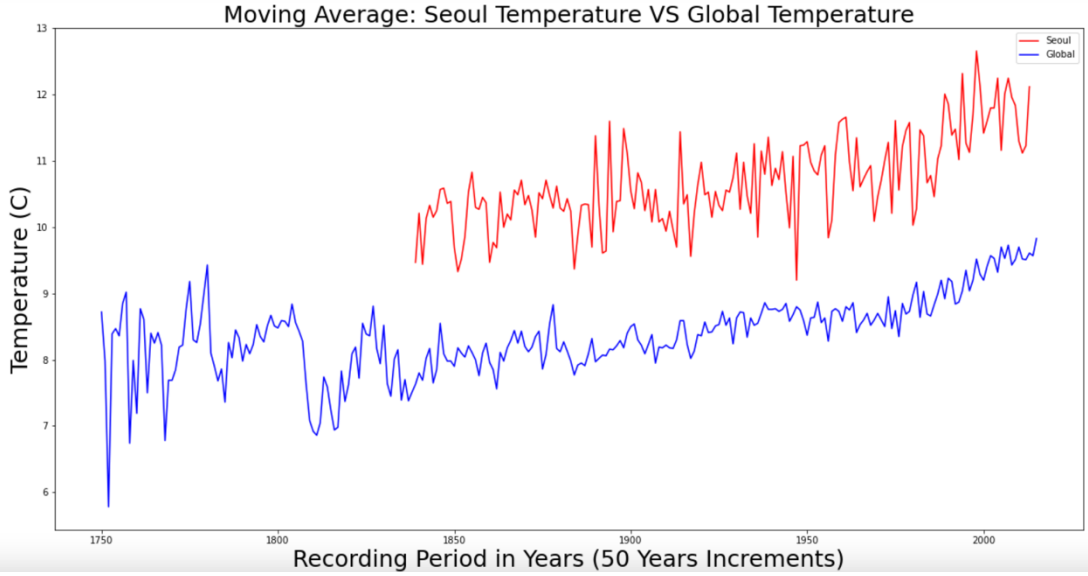
Out[41]:
```
count    266.000000
mean       8.369474
std        0.584747
min        5.780000
25%        8.082500
50%        8.375000
75%        8.707500
max        9.830000
Name: avg_temp, dtype: float64
```

In [24]:
```
#Explore global_temp
global_temp.plot.line(x = 'year', y ='avg_temp', title = 'Average Temperature Globally', xlabel = 'Recording period
```



In [22]:
```
# Combine the data together to get a better analysis of the temp data

from matplotlib import pyplot as plt
plt.figure(figsize=(20,10))
plt.plot( 'year', 'avg_temp', data=seoul_temp, color='red')
plt.plot( 'year', 'avg_temp', data=global_temp, color='blue')
plt.xlabel('Recording Period in Years (50 Years Increments)', fontsize = 25)
plt.ylabel('Temperature (C)', fontsize = 25)
plt.legend(['Seoul', 'Global'])
plt.title('Moving Average: Seoul Temperature VS Global Temperature', fontsize = 25)
plt.show()
```



Data Observation - Use the data to identify trends between the two different sets of data.

Q1: Is your city hotter or cooler on average compared to the global average? Has the difference been consistent over time?

- The data shows, that Seoul's temperature from 1850 has been hotter than the global average. This data has shown Seoul's temperature to be hotter consistently from 1850 to 2000. According to the data, the average temperature of Seoul is 10.68 degrees Celsius, and the global temperature average is 8.37 degree Celsius.

Q2: How do the changes in your city's temperatures over time compare to the changes in the global average?"

- Seoul is a country of 4 distinct seasons which influences the average temperature for short periods of time. As the data shows, Seoul's temperature has sudden highs and lows. Overall, Seoul has had a gradual upward trend of increasing temperatures. This trend is also consistent with the global temperature. Both Seoul's and the global temperature have had a slight upward trend.

Q3: 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?

- In the last 100 years, Seoul's temperatures have had a greater variance in highs and lows. Compared to the global average, Seoul's temperature seems to mimic the trends of the global highs and lows. When the global temperature spiked, so did Seoul's temperature, and vice versa.

Q4: Is the 50 years of recorded data different to the last 50 years?

Yes, the data indicates that there was much more fluctuation in temperatures ranges. From 1850 to 1900, Seoul's average temperature ranged from 9.4 to 11 degrees Celsius. However, is the last 50 years, from 1970 - 2020 the average of Seoul is from 10.5 degrees Celsius to 12.5 degrees Celsius.

Q5: What are some factors that could influence highs and lows in temperature?

- Some factors such as geolocation of the country, urbanization, increase in pollution, and weather. For Seoul, in the last 100 years there has been a massive increase in population, pollution and urbanization. Comparing the data in 1850 to 2020 we can see a greater variance in highs and lows of temperature.