DATA ANALYST NANODEGREE

Project 1

Explore Weather Trend

Overview:

Using datasets that have been provided from the portal to analyze the global temperature and my city temperature. Moreover, I draw the moving average by using the line chart to compare the average temperature global and my city

Tools Used:

1. SQL: To extract the data from the dataset
2. Python:
   - ✓ To calculate the moving average of global and city temperature
   - ✓ To plot the line chart

Step 1: Extraction of data from the database

- Using SQL to export the data from gobal_data

```
SELECT *
    FROM global_data
```

- Select data from city_data

```
SELECT *
    FROM city_data
```

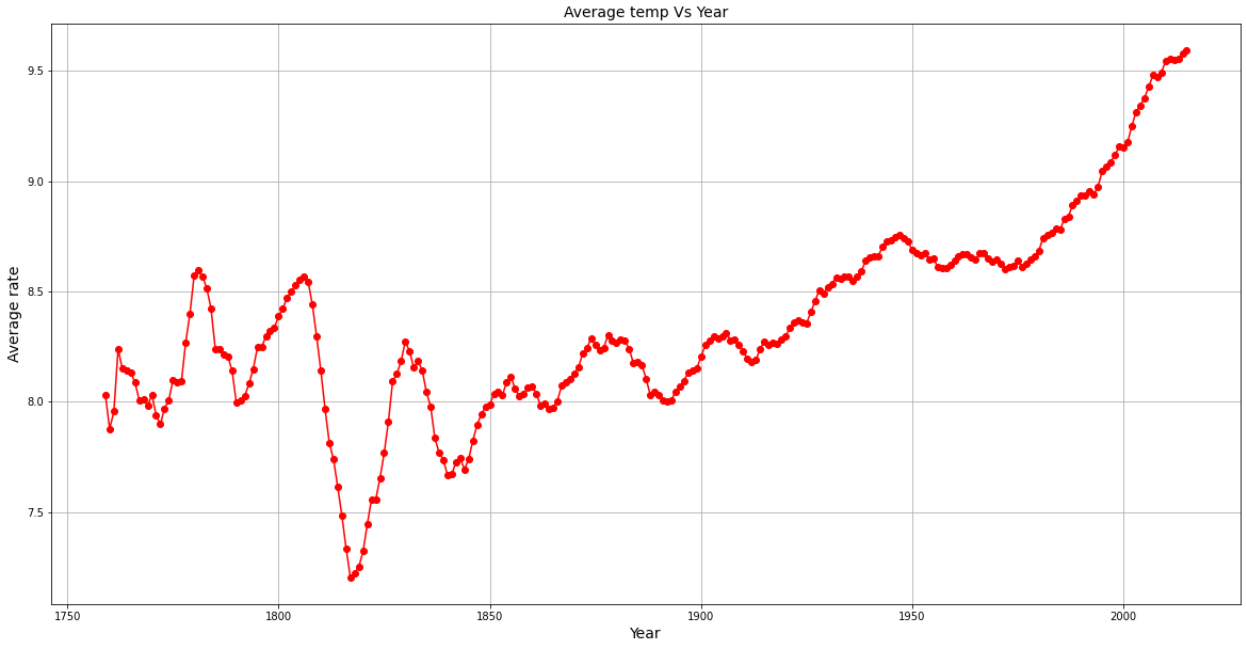
And I have got an option to download a CSV file. I downloaded file as "global_data" and "city_data"

Step 2: Using Python to calculate moving average and plot the line chart

- For “global_data”I have done 10 year moving average to get the smooth line chart. I used the code like below to see the moving average for 10 years

```
#calculate  moving average of 10 year
rolling_window=10
data_world['mean_of_10year'] = data_world['avg_temp'].rolling(rolling_window).mean()
print(data_world)
```

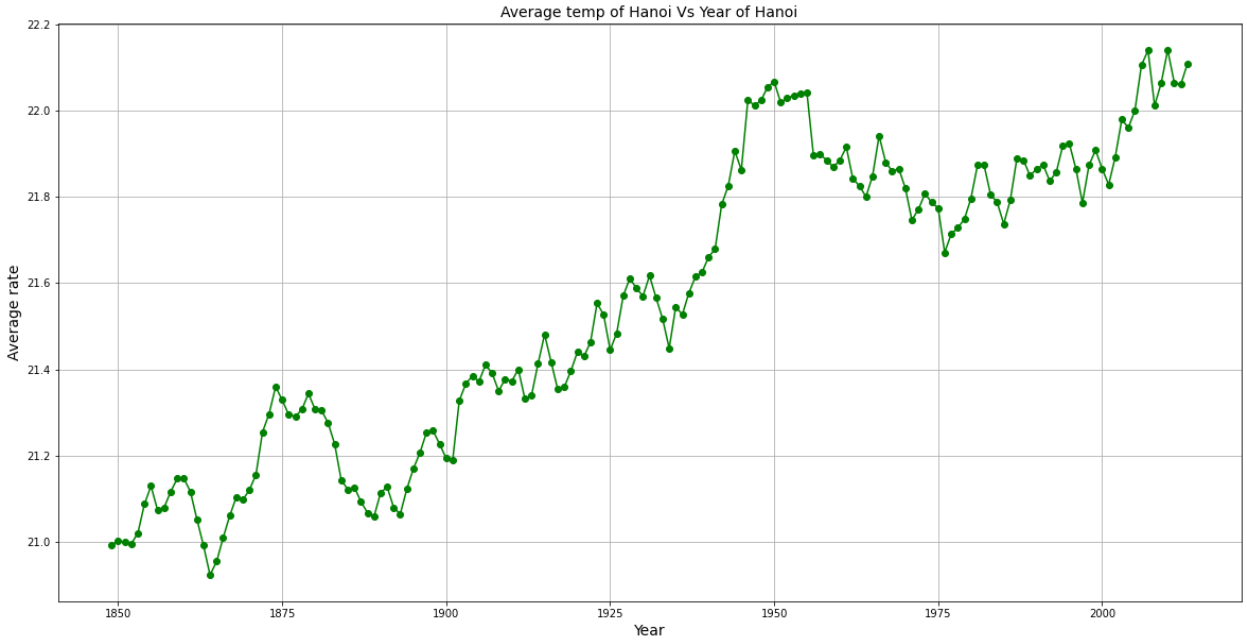
And plot the line chart



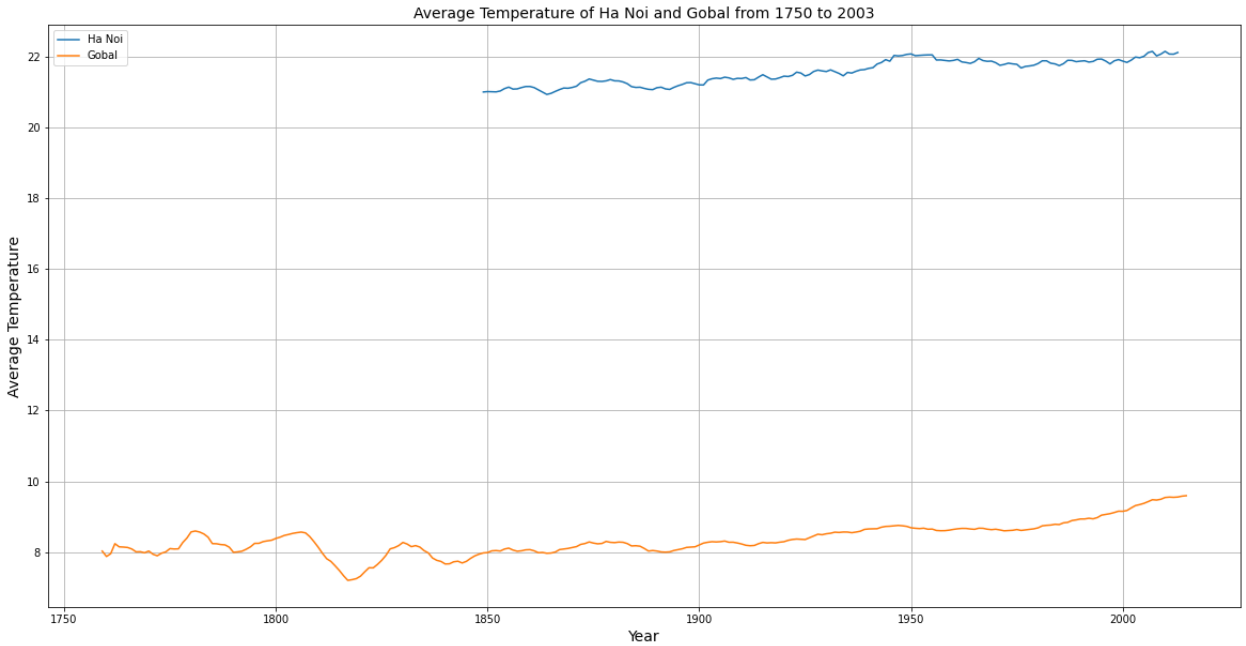
- For the data “city_data”, the first thing I have to do is filer the column city==”Hanoi” and calculate the moving average of 10 years

```
data_HN= df1.query('city=="Hanoi"')
data_HN['mean_of_10year'] = data_HN['avg_temp'].rolling(rolling_window).mean()
print(data_HN)
```

And plot the line chart



Now I combine two lines chart of Global Average Temperature and Hanoi with 10 years MA. Here is the line chart of GAP and Hanoi Average temperatures for 10 years



Observation:

1. If compare the average temperature of Global and Hanoi. Hanoi is hotter than global average temperature
2. For the first graph, I observation that the global temperature is increasing from 8.5 to 9.5. And the second graph the Hanoi temperature also increasing from 20.5 to 22. From the last graph, the temperature of both global and Hanoi are increasing from 1850 to 2013
3. The overall trend of global and Hanoi are similar. For the global average temperature, the average temperature is up and downs during the early years, later during 1996 to 2013 both temperature is increasing
4. The final conclusion is Hanoi is hotter than global temperature and temperature is increasing day by day due to changes in the climate