Name: Akinropo Nasirudeen ATEWOGBOYE

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Address: Hamburg, Germany

Udacity Data Analytic Nanodegree Program (Project 1):

Exploring Weather Trends

INTRODUCTION: Inline with the instruction of the given project, the following software packages were used while executing this project:

1. To extract the data from the database, SQL was used to query the data, I then downloaded the extracted CSV files containing the city data and the global data temperature.
2. The downloaded CSV was opened with Excel sheet in order to analyse the data.
3. It could be deducted from the analysis that the global temperature has been on the rise over the moving average of 15 years.

OUTLINE:

SQL was used to query the data and two CSV files were downloaded, below is the SQL codes used:

1. Data about global temperature

   ```
   SELECT *
   FROM global_data
   ```
   Note: This was just to have general view about the entire data for global temperature

2. Data about the current city I stay (Hamburg)

   ```
   SELECT *
   FROM city_data
   WHERE city = 'Hamburg'
   ```
   Note: This was just to have general view about the entire data for Hamburg temperature

3. In order to get data needed for both variables in one table I used:

   ```
   SELECT city_data.year, city_data.avg_temp as hamburg_city_temp, global_data.avg_temp as
   global_temp
   FROM city_data, global_data
   WHERE city_data.year = global_data.year
   AND city_data.city = 'Hamburg'
   ```

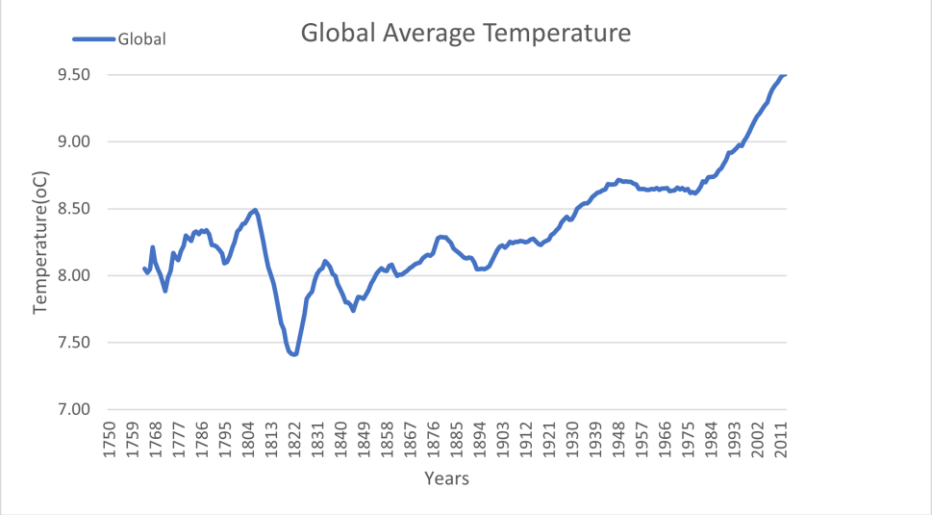
TO CALCULATE THE MOVING AVERAGE:

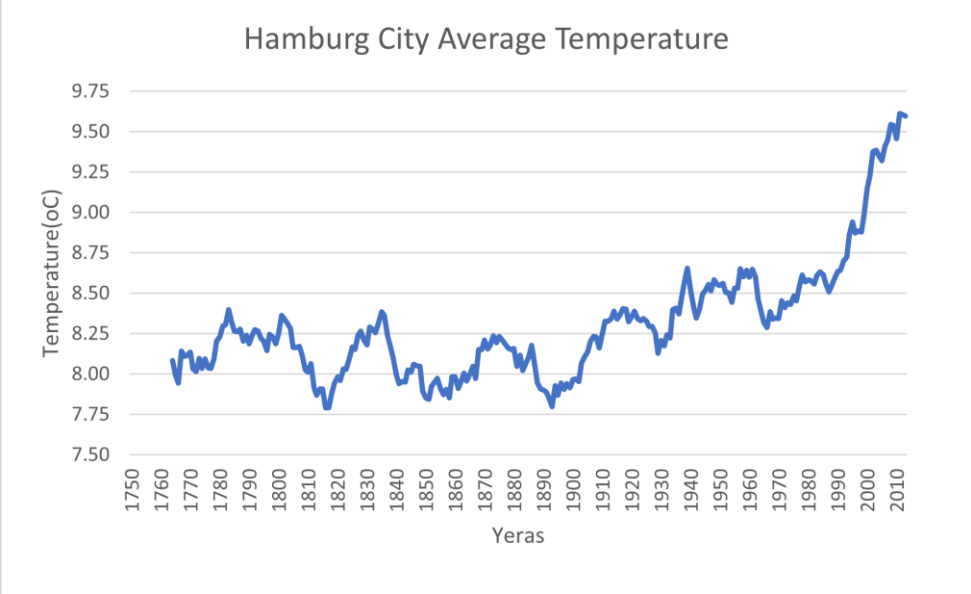
In order to smooth out data for clear visualization of temperature trend, I used the moving average of 20 years. To calculate the moving average, I simply used the 'Data Analysis' function in excel. I computed the moving averages in different column on the same sheet and labelled appropriately.

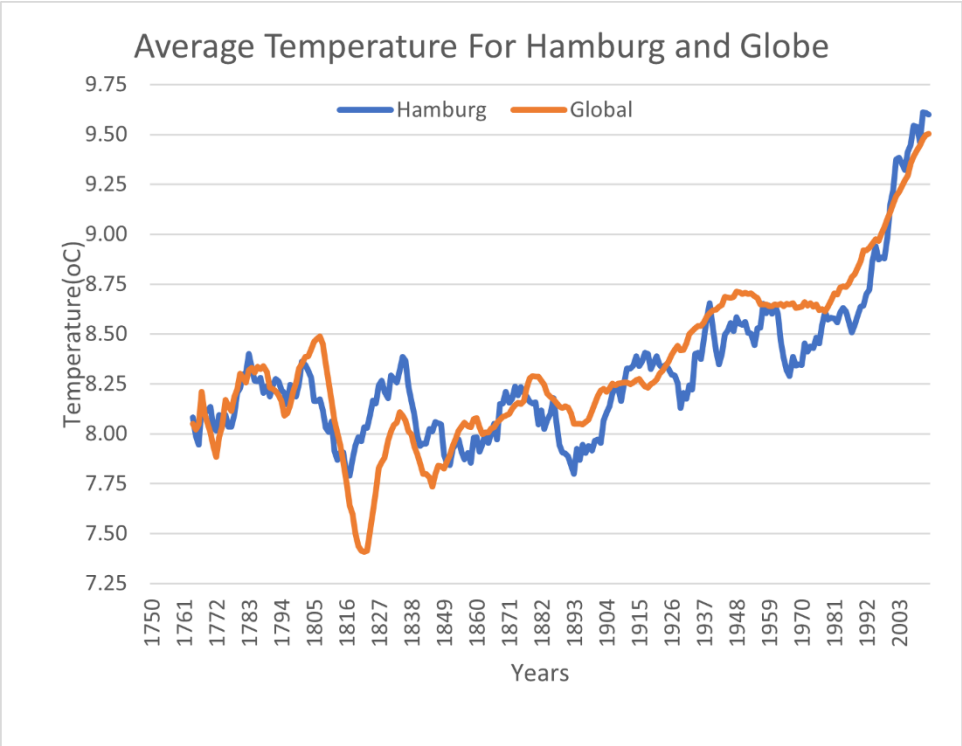
DATA VISUALIZATION USING LINE CHART:

I simply used the plotting functions in excel for the all the charts. Below are the charts:

The first two charts show the separate average temperature of the globe and hamburg city while the last shows the trend of both.







This chart shows the trend average temperature of Hamburg and the globe.

DEDUCTIONS:

With the charts above, the following could be deduced:

1. Looking at the global trend, it could be seen that there was a temperature declination around early 1800s before it took an exponential rise thereafter.
2. After around 1915 there were rising in the global temperature with negligible drop and after 1970 there have been constant rising in the global temperature, and this could be as a result of global warming.
3. With Hamburg trend, it could be deduced that there seems to be a case of rise and fall in temperature over a certain period but there was a significant increase if not exponential increase in temperature after short declination around 1970.
4. The major difference in temperature between Hamburg and the globe was evident until after 1970 where they seem to be rising at almost the same rate.

CONCLUSION: Generally, with the data visualization above, it is evident that the global temperature has been on the rise over time.

REFERENCE:

Random google search and youtube videos.