# Project 1- EXPLORING WEATHER TRENDS

# UDACITY - Data Analyst Nanodegree

Date-APRIL 29

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## Introduction:-

In this project, I Analyzed the Temperature of Delhi and Global Temperature and compared them.
I Extracted data from Udacity database and MAnipualte according to my goals.

## Goals:-

1. Extract data from the Udacity database(.csv file)
2. Create a Chart Visualization(Line Chart)
3. Observation based on Chart

## Tools Used:-

-> SQL: To Extract data from database
-> Microsoft Excel: To view Extracted data
-> Python: To Manipulate data
-> Anaconda-Jupyter Notebook: To Implement the Manipulated data(Python code)

# STEP - 1(Extraction of Data from Database):

The Following steps are taken for the Extraction of data from database,
the Tool used here is SQL.

**1. Find the Cities available for 'INDIA' in the database:**

```
select *
From city_list
where country = 'INDIA';
```

**2. I got the list and I've chosen 'Delhi' for this Project; I have provided with the SCHEMA of the tables.The table of 'city' and 'global' have same column name(i.e.'avg_temp').So I renamed the column and join the table using 'JOIN' function().**

```
select c.year,c.avg_temp AS city_avg_temp,g.avg_temp AS global_avg_temp
 from city_data c
 Join global_data  g on c.year = g.year
  Where c.city = 'Delhi'
  AND c.avg_temp is not Null;
```

**3. After getting the Output, I have downloaded the data as "results.csv".**

# STEP - 2 (Visualization of Data):

The Following steps are taken for the Visualization of Data, The Tool used here is Python and Jupyter Notebook.

In [1]:

```
1. #Importing Libraries
import pandas as pd                      #for Importing the .csv files
import matplotlib.pyplot as plt         #For plotting Line Chart
```

In [2]:

```
2. #Importing Datasets
dataset=pd.read_csv('results.csv')
```

In [3]:

```
dataset
```

Out[3]:

| | year | city_avg_temp | global_avg_temp |
|---|---|---|---|
| **0** | 1796 | 25.03 | 8.27 |
| **1** | 1797 | 26.71 | 8.51 |
| **2** | 1798 | 24.29 | 8.67 |
| **3** | 1799 | 25.28 | 8.51 |
| **4** | 1800 | 25.21 | 8.48 |
| **...** | ... | ... | ... |
| **196** | 2009 | 26.55 | 9.51 |
| **197** | 2010 | 26.52 | 9.70 |
| **198** | 2011 | 25.63 | 9.52 |
| **199** | 2012 | 25.89 | 9.51 |
| **200** | 2013 | 26.71 | 9.61 |

201 rows × 3 columns

***3. For Calculating Moving Average and Rolling function,I have taken reference which I've mentioned below.***

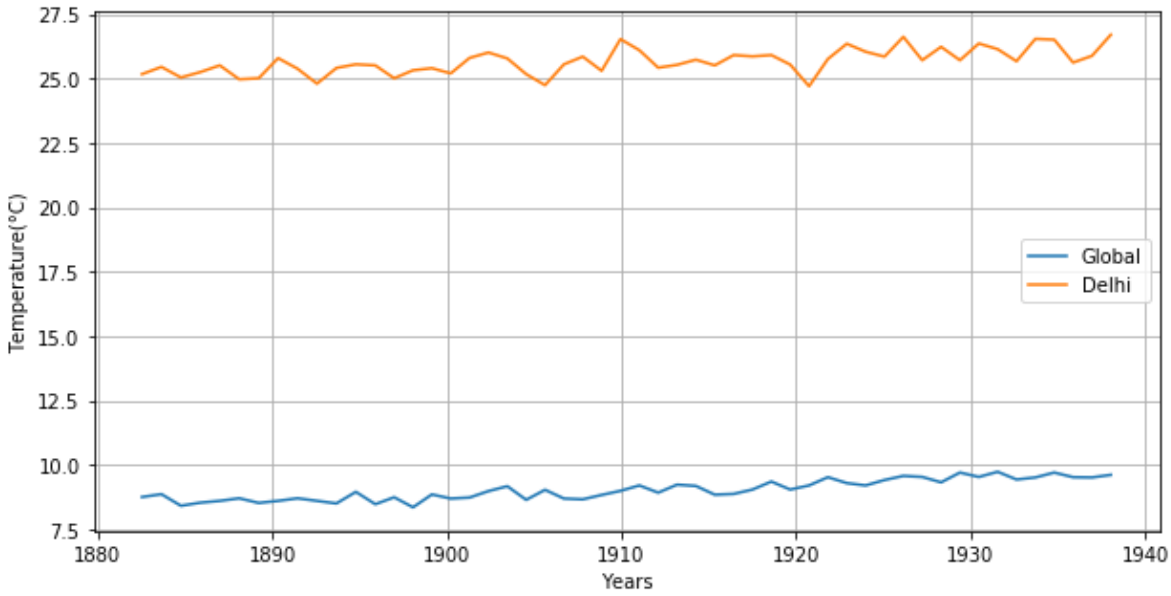
```
#Calculating Moving Average
```

In [4]:

```
moving_avg_global = dataset.rolling(window = 150,center = False,on='global_avg_temp').mean(
moving_avg_city = dataset.rolling(window = 150,center = False,on='city_avg_temp').mean()
```

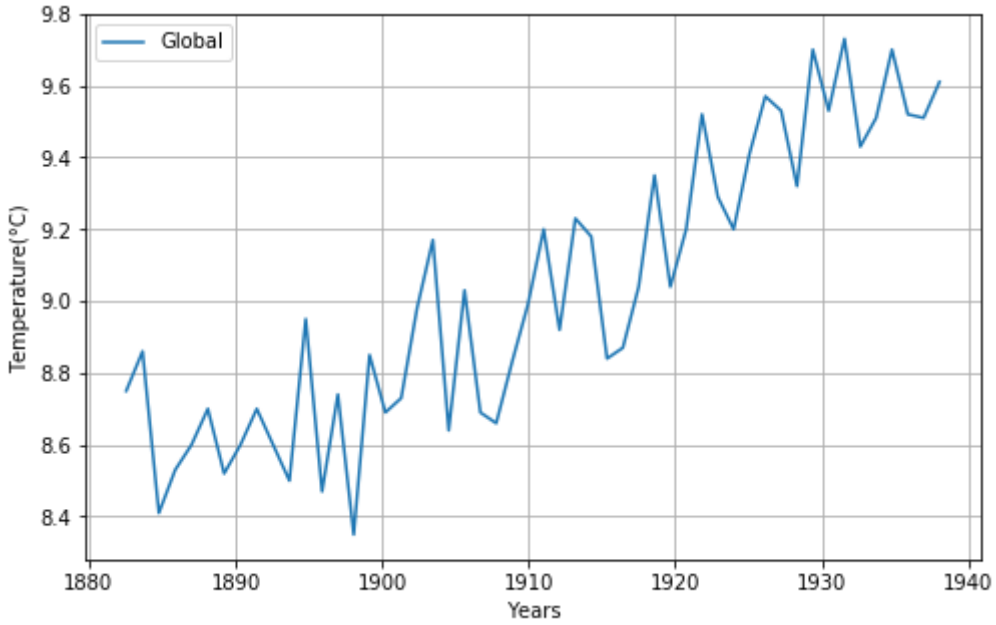
In [5]:

```
4. #Visualizing the plot of Global and City Teperature
plt.figure(figsize =(10,5))
plt.grid(True)
plt.plot(moving_avg_global['year'],moving_avg_global['global_avg_temp'],label='Global')
plt.plot(moving_avg_city['year'],moving_avg_city['city_avg_temp'],label='Delhi')
plt.legend()
plt.xlabel('Years')
plt.ylabel('Temperature(°C)')
plt.show()
```



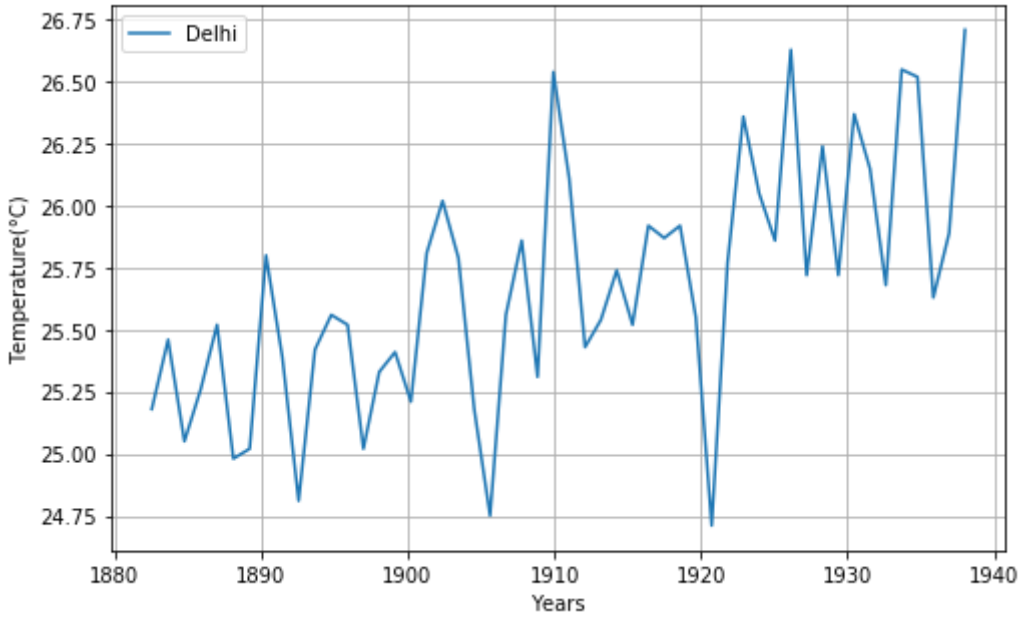
In [6]:

```
5.#Visualizing the plot of Global Temperature
plt.figure(figsize =(8,5))
plt.grid(True)
plt.plot(moving_avg_global['year'],moving_avg_global['global_avg_temp'],label='Global')
plt.legend()
plt.xlabel('Years')
plt.ylabel('Temperature(°C)')
plt.show()
```



In [7]:

```
6.#Visualizing the plot of City Temperature
plt.figure(figsize =(8,5))
plt.grid(True)
plt.plot(moving_avg_city['year'],moving_avg_city['city_avg_temp'],label='Delhi')
plt.legend()
plt.xlabel('Years')
plt.ylabel('Temperature(°C)')
plt.show()
```




# Analysis and Conclusion:

1. The Global average temperature version from 8.4°C to 9.6°C While Delhi average temperature version from 24.75°C to 26.70°C Which is a big Difference.
2. From the Chart, I have also observed a very big Difference between the Average temperature of Delhi and that of World.
3. I also Notice that the Global temperature is rising 0.1°C(approx.) every yearwhich is Constant.
4. Due to Industrialization,the Global temperature has started increasing at a higher rate.
5. As Delhi is Found near the Equator,Hence the Global average temperature is very less as compared to Equatorial region.

# Considerations:

--> X-Axis:Years
--> Y-Axis:Temperature(°C)
--> Different color lines for global and city average temperature.
--> Used matplotlib.pyplot for plotting line Chart.
--> Used pandas for importing the dataset.
--> All the Codes are written in the PDF file for all reference.

# Reference:

1.GITHUB-https://github.com/VELLALAKAVYA/Explore-Weather-Trends-Udacity
2.youtube-https://www.youtube.com/watch?v=4gaymR1vrEE