Project: Explore Weather Trend: (Saurabh kumar)

1.Data Collection:

First, I explore all the three tables given by using SQL Queries given below:

Data Exploration:

**City List:**

SELECT city, country

FROM city\_list

**Fetching city level Data:**

SELECT year, city, country, avg\_temp

FROM city\_data

where city = 'Boston' and country = 'United States'

**Global Data**

select year, avg\_temp from global\_data

Finally, I extracted a table combined from both city\_data and global\_data using Inner join query with year as column to join both tables.

SELECT a.year, a.city, a.country, a.avg\_temp as "Boston\_Temp", b.avg\_temp as "Global\_Temp"

FROM city\_data a

INNER JOIN global\_data b

on a.year = b.year

WHERE a.city = 'Boston'

And country = 'United States'

2. I saved the file from Udacity platform and saved as csv. I opened this file using Excel, and then explore the data in general. Later I explore data for missing values. There was a missing value for Year 1780 in Global data Temperature. I do not want to lost data, so I substitute it with Median of all values of temperature present in Global Data.

3. As given I then calculated Moving average using Average() function in Excel. I took the Average of last 7 years to make curves looks even and not to lose trends in data. Then I made a line chart using Excel, with year on X -axis and temperature values on Y-axis. While creating visualization, I want the trend to be visible better so, I test moving average based on 3 years, 5 years, 7 years, and 10 years. I found Average based on 7 years to be best for my visualization. I wanted to make sure legends are there to differentiate between global data and Boston data. I want the Boston Data to strike out to make it easily comparable, so I decided to make Global Data in Grey color. I decided to go with Line chart because it made the comparison easier than stacked bar chart or area chart.

4. Trendline Chart:

Y- axis represent the Average Temperature, X- axis represent Years.

5.Observations:

1. Over the Years Boston temperature is increasing and so Global temperature.
2. It is interesting to notice that in 1784, Bost temperature was the lowest with Average of 5.32. This is the lowest in entire history of Boston
3. One point is to note that in 1784, Boston has coldest year, but the Global temperature increased abnormally. This is interesting because except year 1784 the temperature of Boston and Global is moving in coherence to each other, but in 1784 something happened that made Boston Cooler and lead to increase in temperature in cities other than Boston. The peaks in year 1784 are just opposite to each other.
4. Year 2013 is the hottest year for both Boston and globally. Boston and Global have the highest temperature in this year.