UDACITY

Data Analysis project named “Explore Weather Trends”:

OVERVIEW: We will be analyzing local and global temperature data and compare the temperature trends followed at local and global level.

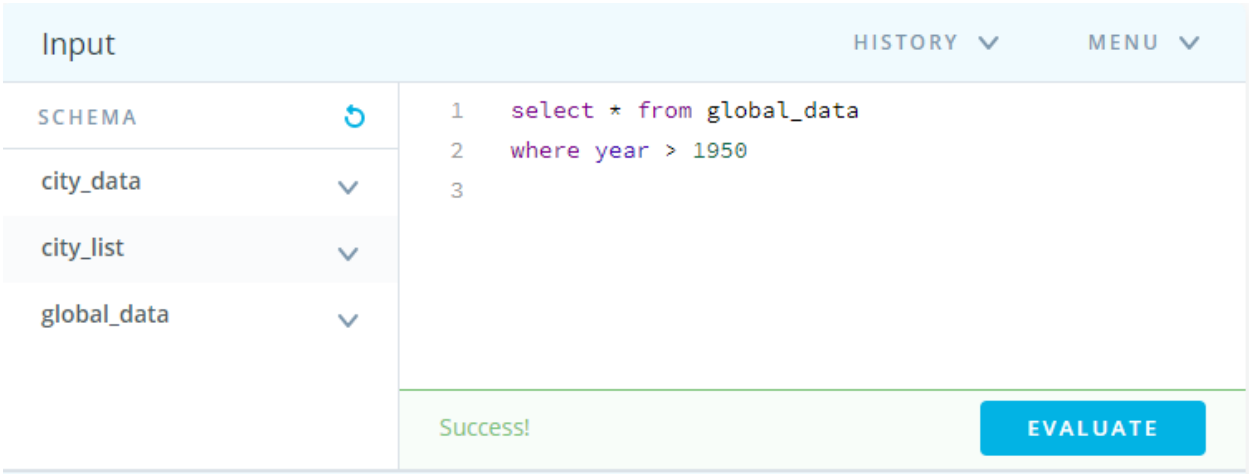
REQUIREMENTS:

- Extract the required data
- Outline the local and global trends
- Make observations based on trends

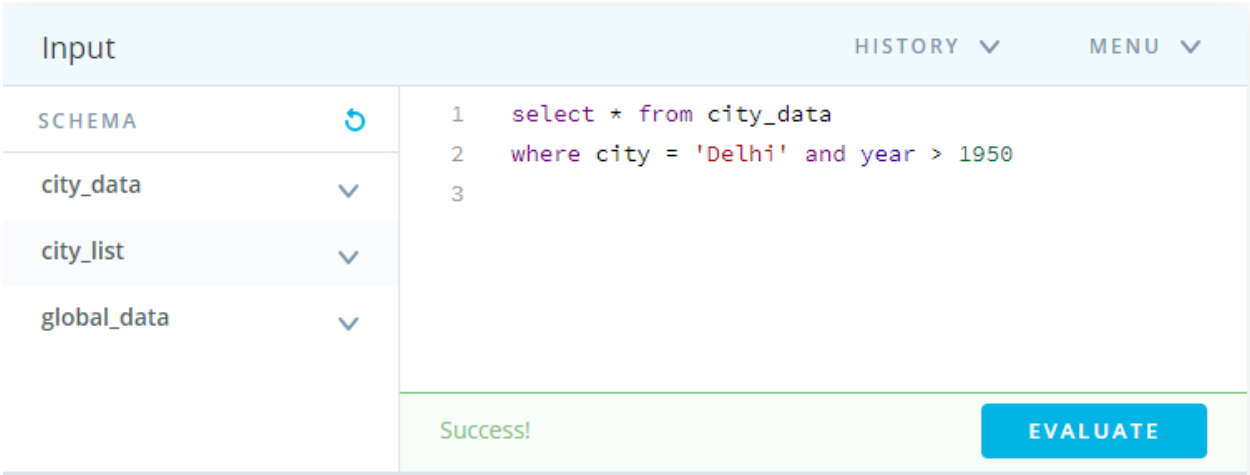
PROCEDURE:

STEP 1: First of all for analysis the key requirement is **DATA** which we will derive using the SQL queries, mentioned below

For obtaining Global data:



For obtaining Local data: which we have selected as “Delhi”



STEP 2: After we figure out the SQL query, we will transfer the data available in a CSV file format using the 

option provided by Udacity on their platform

Data will be available in format below

Year	City	Avg_Temp		Year	City	Country	Avg_Temp
1951	Global	8.63		1951	Delhi	India	25.58
1952	Global	8.64		1952	Delhi	India	25.84
1953	Global	8.87		1953	Delhi	India	26.14
1954	Global	8.56		1954	Delhi	India	25.68
1955	Global	8.63		1955	Delhi	India	25.15
1956	Global	8.28		1956	Delhi	India	25.3
1957	Global	8.73		1957	Delhi	India	24.91
1958	Global	8.77		1958	Delhi	India	25.93

STEP 3: So as to make a smooth comparison trends between local and global temperature trends, we will calculate Central Moving Average (CMA) for which the formula is mentioned below

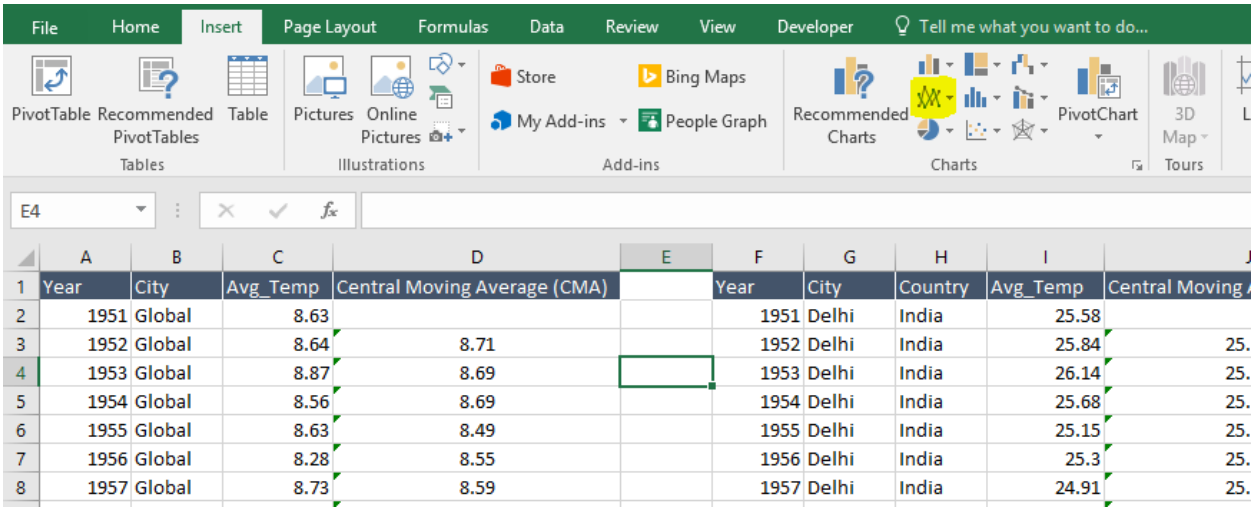
	Year	City	Avg_Temp	Central Moving Average (CMA)
	1951	Global	8.63	
	1952	Global	8.64	=AVERAGE(I2:I4)
	1953	Global	8.87	8.69
	1954	Global	8.56	8.69

After calculating for both data preview will be

Year	City	Avg_Temp	Central Moving Average (CMA)		Year	City	Country	Avg_Temp	Central Moving Average (CMA)
1951	Global	8.63			1951	Delhi	India	25.58	
1952	Global	8.64	8.71		1952	Delhi	India	25.84	25.85
1953	Global	8.87	8.69		1953	Delhi	India	26.14	25.89
1954	Global	8.56	8.69		1954	Delhi	India	25.68	25.66

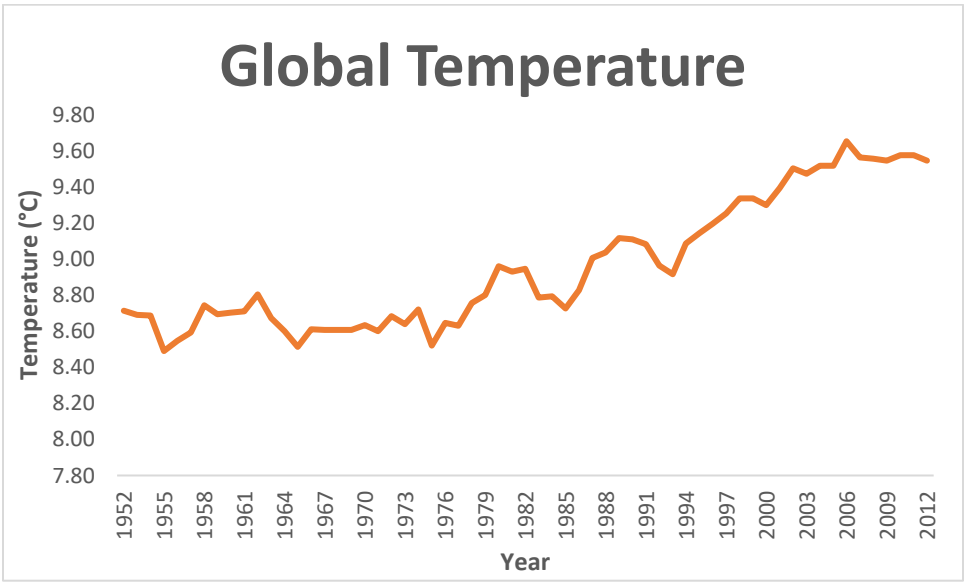
STEP 4: At last, we will visualize the data independently for local and global temperatures and then together in a single chart to get the observations with both the faces in view.

Data is visualized using Line Charts option in excel (yellow highlighted).

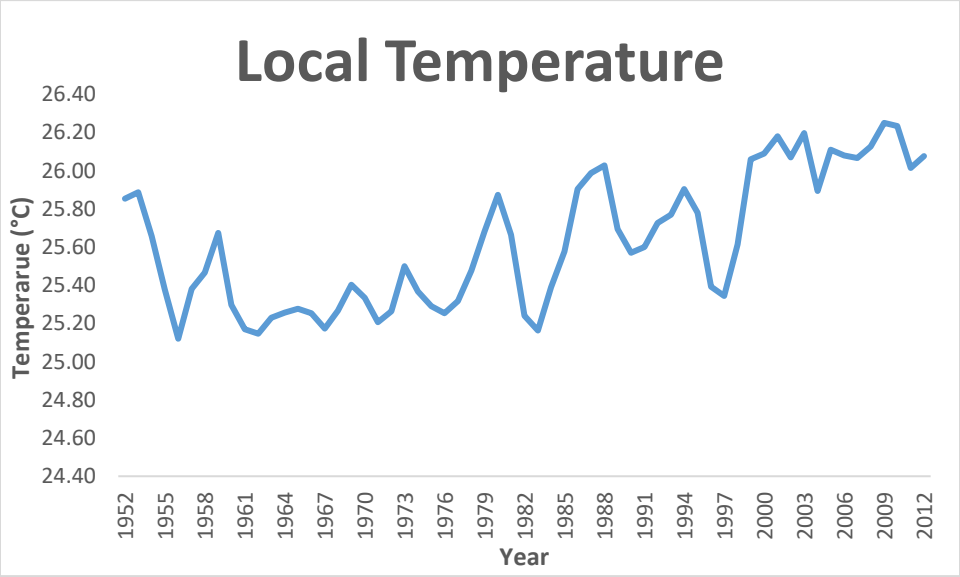


	A	B	C	D	E	F	G	H	I	J
1	Year	City	Avg_Temp	Central Moving Average (CMA)		Year	City	Country	Avg_Temp	Central Moving A
2	1951	Global	8.63			1951	Delhi	India	25.58	
3	1952	Global	8.64	8.71		1952	Delhi	India	25.84	25.
4	1953	Global	8.87	8.69		1953	Delhi	India	26.14	25.
5	1954	Global	8.56	8.69		1954	Delhi	India	25.68	25.
6	1955	Global	8.63	8.49		1955	Delhi	India	25.15	25.
7	1956	Global	8.28	8.55		1956	Delhi	India	25.3	25.
8	1957	Global	8.73	8.59		1957	Delhi	India	24.91	25.

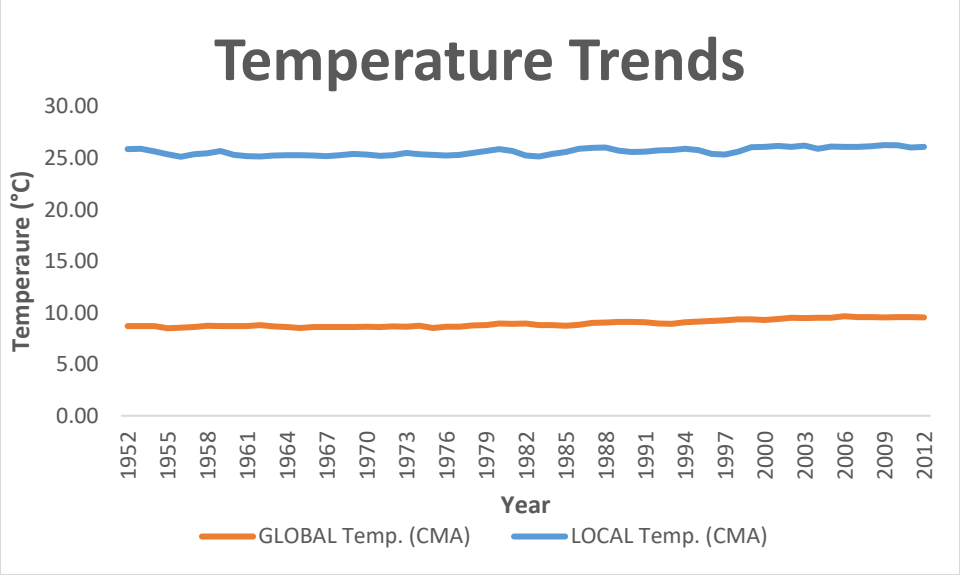
Global Temperature trend (individual)



Local Temperature trend (individual)



Comparison between Global and Local Temperatures



OBSERVATIONAL ANALYSIS:

- The maximum moving average Global temperature marked during period (1952-2012) was 9.6°C in 2006 and max for Local temperature marked was 26.25°C in 2009
- The difference in temperatures between Global and Local levels indicate Local city "Delhi" is very hot for an individual to reside in
- After the year 1975, Global temperature has shown a regular upward trend (which clearly depicts the signs of increasing Global Warming)
- There are huge ups and downs in Average Local temperature; after 1975 Local temperature is showing a new maximum after an approximate interval of one or two decades followed by large dips too in it
- On comparison we can see that there is a approximately constant difference between two over the whole time period (1952-2012)

REFERENCE:

For Udacity Logo present at the top

- https://images.app.goo.gl/NDzZUAudDZ9fscXQ8