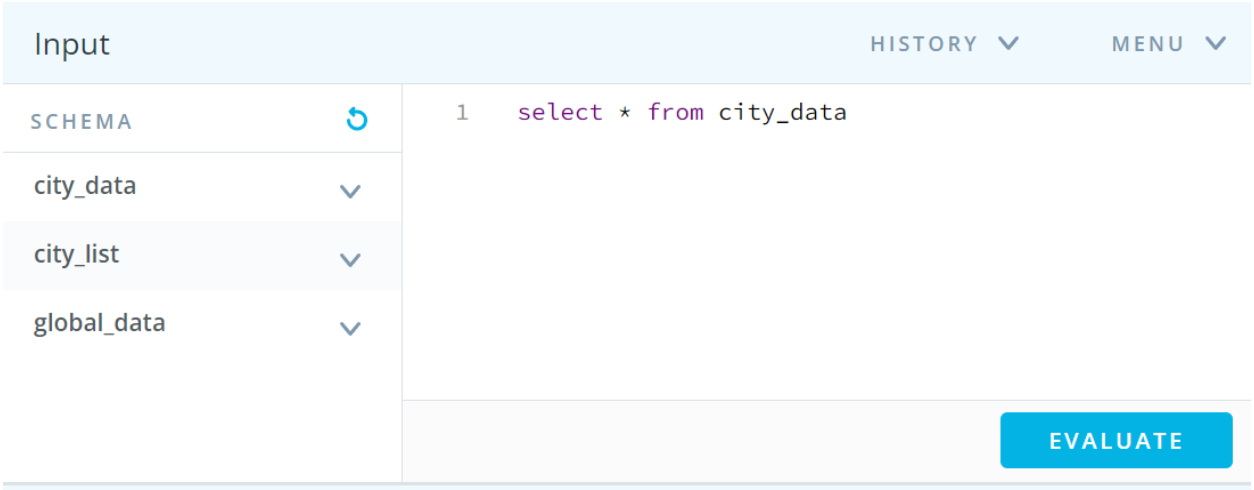
Weather Trends Project

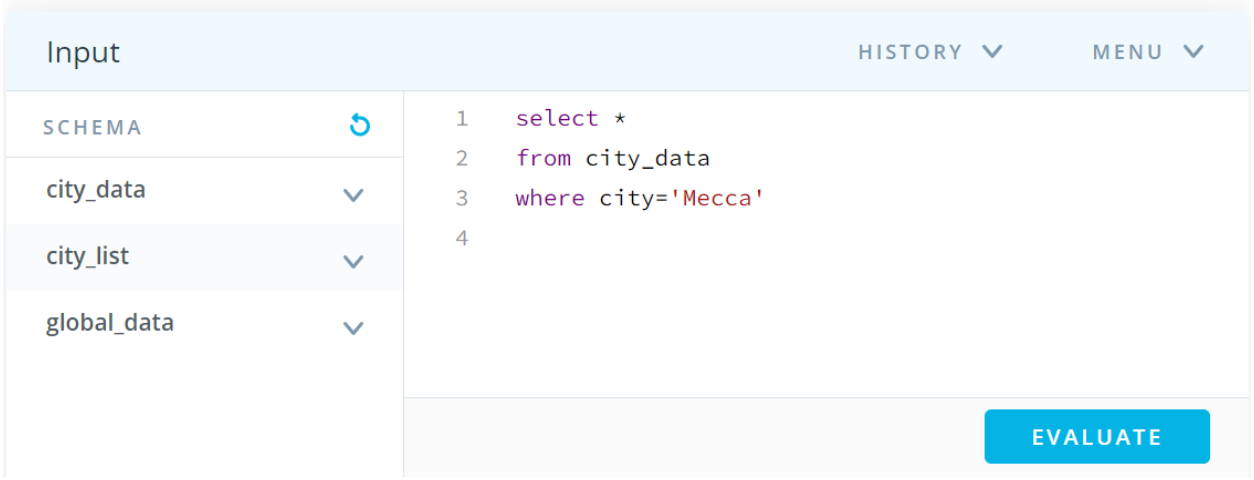
In this project, I had to go through series of steps to complete it. I am going to provide detail about each step from extracting the temperatures data to creating a visualization and identify similarities and differences between global and local temperature trends.

Tools I used:

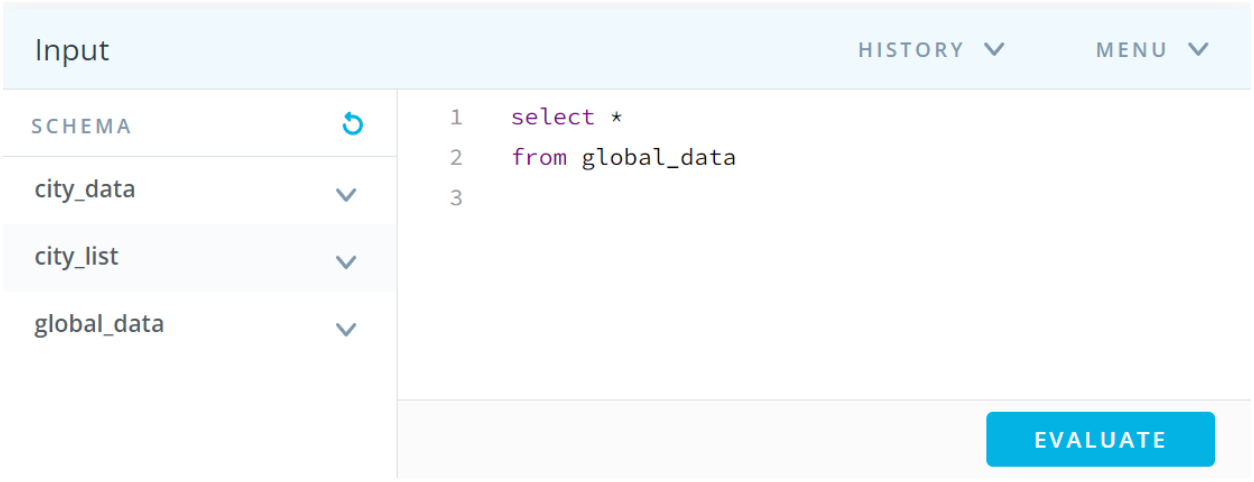
First of all, there are two main tools that I used in order to interact with temperature data. The first one to extract global and local data from database using Udacity workplace. I used three SQL queries. First one helped me to know the nearest city to me as requested in the project with the query below. The output is a table which contains Mecca and Riyadh.



The second query which I used below helped me to extract the average temperatures for the city where I live which is Mecca by year:



Also, for the global data I used the query below to extract global temperatures by year:



After downloading both CSV files here comes the second tool which is Excel that allowed me to deal with both tables in a spreadsheet, calculate a moving average for years and Create a line chart to compare global and local temperatures.

Moving Average:

For the purpose of smoothing out the temperature data I calculated the moving average based on average temperature column on both global and local data. I added two new columns, one for global moving average and the other for local moving average which I used AVERAGE() function to calculate the first seven years of temperatures and dragged the same formula down the cells.

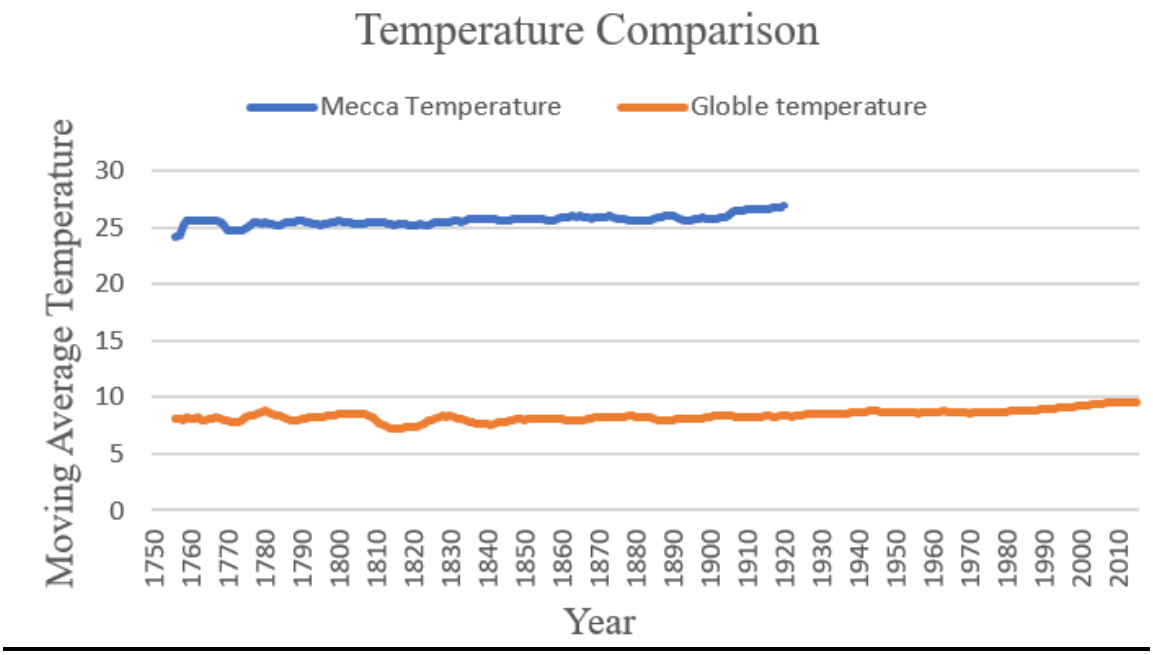
avg_temp	Mecca MA	avg_temp	Globle MA
25.16		8.72	
19.05		7.98	
22.46		5.78	
25.6		8.39	
25.6		8.47	
25.6		8.36	
25.6	24.15286	8.85	8.078571
25.6	24.21571	9.02	8.121429
25.6	25.15143	6.74	7.944286
25.6	25.6	7.99	8.26
25.6	25.6	7.19	8.088571
25.6	25.6	8.77	8.131429
25.6	25.6	8.61	8.167143
25.6	25.6	7.5	7.974286
25.6	25.6	8.4	7.885714
25.6	25.6	8.25	8.101429
25.6	25.6	8.41	8.161429
25.6	25.6	8.22	8.308571
23.98	25.36857	6.78	8.024286

Key Consideration About Trends Visualization:

After the trends became more observable using moving average, I made a line chart in Excel to which helped me to visualize the data.

The Line Chart:

The figure below shows local and global temperature trends:



Observations:

My observations about the line chart are as follows:

- Obviously, Mecca's temperature is much hotter than the global temperature throughout the years
- Also, the difference between Mecca and global average has not been consistent overtime
- The changes in Mecca's temperature is the same as the changes in the global temperature overtime
- Overall, the world temperature is getting cooler.