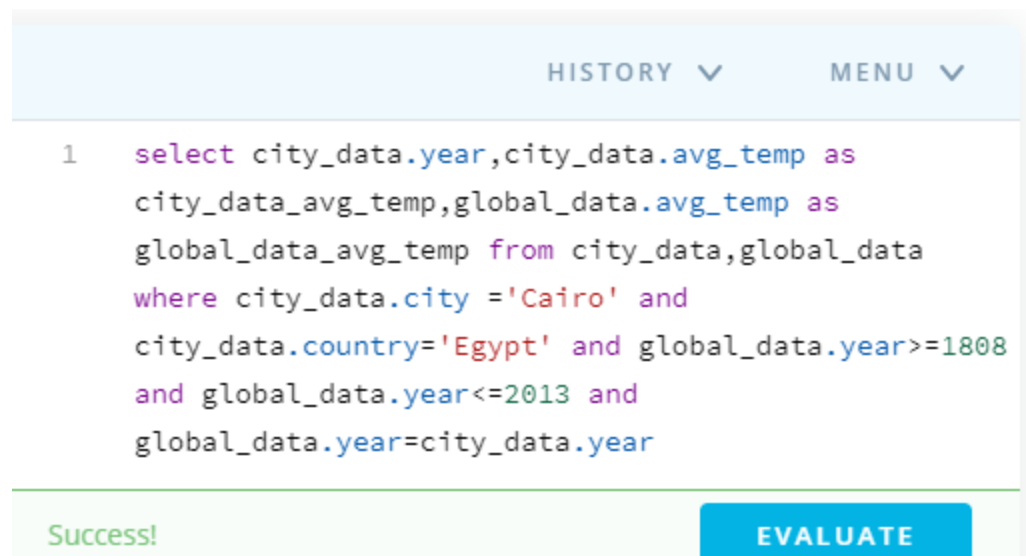**First project**

<u>Exploring Weather Trends</u>

Using the Udacity workspace that is connected to the database write this SQL query to extract the city level data and the global data

And then choose Download CSV to download the output of extracting this query

After downloading the file open it using the Excel and it will be look like that

	A	B	C
1	year	city_data_avg_temp	global_data_avg_temp
2	1808	17.11	7.63
3	1809	19.87	7.08
4	1810	19.93	6.92
5	1811	20	6.86
6	1812	19.93	7.05
7	1813	20.51	7.74
8	1814	20.43	7.59
9	1815	20.3	7.24
10	1816	20.51	6.94
11	1817	21.88	6.98
12	1818	11.6	7.83
13	1819	20.31	7.37
14	1820	20.58	7.62
15	1821	20.63	8.09
16	1822	20.72	8.19
17	1823	20.71	7.72
18	1824	21.44	8.55
19	1825	21	8.39
20	1826	20.94	8.36
21	1827	21.63	8.81
22	1828	20.99	8.17
23	1829	20.91	7.94

p1 data

After that calculate the moving average for the city_data_avg_temp and the global_data_avg_temp columns (here I used the average of 5 years) to calculate it you should create another two columns and name them any names and make the first one for the city and the second one for the global temperature and here I used the

average of five years so I started from the fifth year and use the AVERAGE() function to calculate the average temperatures for the first five years of my city (Cairo) then use Copy + Paste, Ctrl + D, or click and drag the formula down to the next cells and repeat these steps to calculate the moving average for the global temperatures.

After that the Excel sheet will be like that

	AC21		×	✓	f_x									
	A	B	C	D	E	F	G	H	I	J
1	year	city_data_avg_temp	global_data_avg_temp						5 years moving avg_city	5 years moving avg_global
2	1808	17.11	7.63							
3	1809	19.87	7.08							
4	1810	19.93	6.92							
5	1811	20	6.86							
6	1812	19.93	7.05						19.368	7.108
7	1813	20.51	7.74						20.048	7.13
8	1814	20.43	7.59						20.16	7.232
9	1815	20.3	7.24						20.234	7.296
10	1816	20.51	6.94						20.336	7.312
11	1817	21.88	6.98						20.726	7.298
12	1818	11.6	7.83						18.944	7.316
13	1819	20.31	7.37						18.92	7.272
14	1820	20.58	7.62						18.976	7.348
15	1821	20.63	8.09						19	7.578
16	1822	20.72	8.19						18.768	7.82
17	1823	20.71	7.72						20.59	7.798
18	1824	21.44	8.55						20.816	8.034
19	1825	21	8.39						20.9	8.188
20	1826	20.94	8.36						20.962	8.242
21	1827	21.63	8.81						21.144	8.366
22	1828	20.99	8.17						21.2	8.456
23	1829	20.91	7.94						21.094	8.334

p1_data

Now we can use the I & J columns instead of the B & C columns to create the line chart and it will be something like that

Weather trends

Year — Cairo — Global
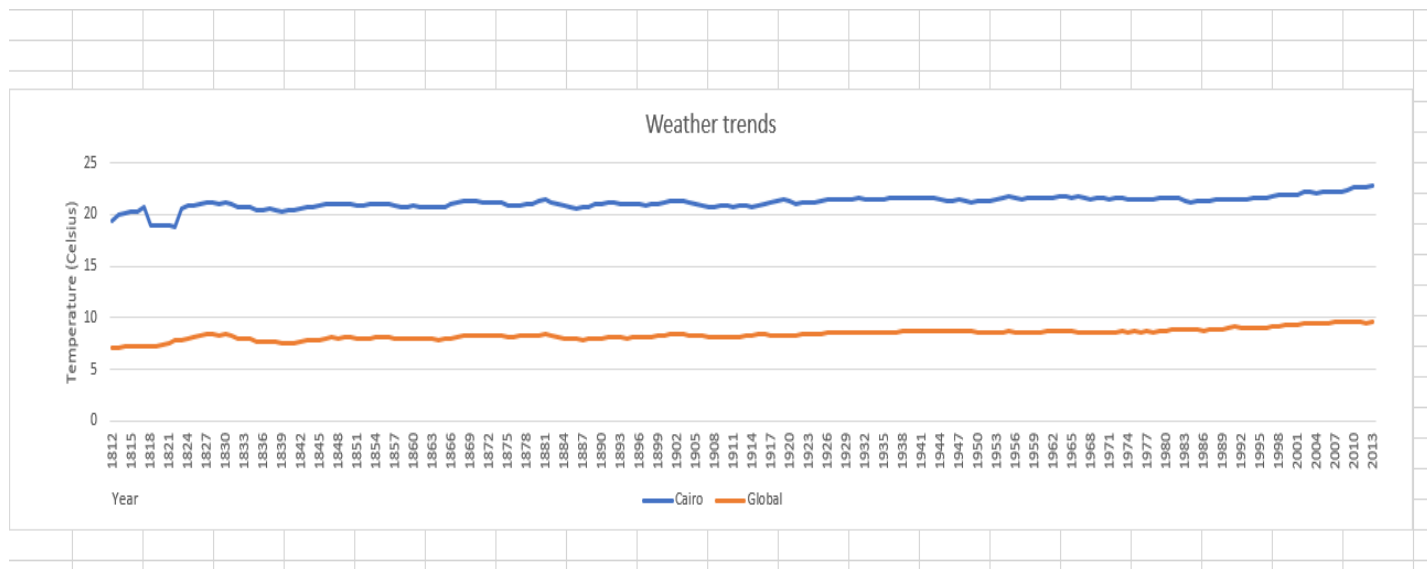
The x axis represents the years and the y axis represents the temperature and the blue line represents the city (Cairo) trends and the orange line represents the global trends.

After looking to the chart take the observations :-

1. my city is hotter on average compared to the global average.
2. the difference was Approximately consistent over time but sometimes it differs such as in 1818 the difference get smaller.
3. The correlation is 0.58 (A moderate uphill (positive) relationship).
4. The average temperature in my country (Cairo) is 21.16961 and the average temperature in the global is 8.396845.