



مؤسسة محمد بن سلمان الخيرية
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Data Analyst Nanodegree Program **PROJECT ONE**

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PROJECT ONE

1.1 Extract Data from Database

First step I need to find my city in `city_list` . To do this step in SQL query I wrote these queries to show all cities in the Saudi Arabia :

The screenshot shows a SQL query interface. On the left, there's a sidebar with a dropdown menu labeled "SCHEMA" containing "city_data", "city_list", and "global_data". The main area has "HISTORY" and "MENU" buttons at the top right. A code editor window contains the following SQL query:

```
1 SELECT *
2 FROM city_list
3 WHERE country = 'Saudi Arabia'
```

The status bar at the bottom right says "Success!" and has a blue "EVALUATE" button. Below the interface, the word "Output" is followed by "2 results" and a "Download CSV" button.

Fig 1.1: SQL query for `city_list`

1.2 Extract Riyadh Data

To do this step in SQL query and extract temperature data for Riyadh city I wrote these queries :

The screenshot shows a SQL query interface. On the left, there's a sidebar with a dropdown menu labeled "SCHEMA" containing "city_data", "city_list", and "global_data". The main area has "HISTORY" and "MENU" buttons at the top right. A code editor window contains the following SQL query:

```
1 Select year , avg_temp
2 FROM city_data
3 where city = 'Riyadh';
```

The status bar at the bottom right says "Success!" and has a blue "EVALUATE" button. Below the interface, the word "Output" is followed by "171 results" and a "Download CSV" button.

Fig 1.2: SQL query for `city_data`

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1.3 Extract Global Data

To do this step in SQL query and extract temperature data for Global I wrote these queries :

The screenshot shows a SQL query editor interface. On the left, there's a sidebar titled "SCHEMA" with three items: "city_data", "city_list", and "global_data", each with a dropdown arrow. The main area has a code editor with the following SQL query:

```
1 Select year , avg_temp
2 FROM global_data;
```

Below the code, a green "Success!" message is displayed. At the bottom right is a blue "EVALUATE" button. At the top right, there are "HISTORY" and "MENU" dropdowns. At the bottom left, it says "Output 266 results" and at the bottom right is a "Download CSV" link.

Fig 1.3 : SQL query for global_data

2.1 Data Selection

All data that extracted I downloaded as CSV files and used in Excel and I have merged the files in one file . In the global database more Results as I shown in last fig (266 results) and extract the 171 results from Riyadh Data so I'm choosing the range of common years (1848-2013).

year	avg_temp Riyadh	avg_temp Global
1848	24.56	7.98
1849	24.8	7.98
1850	24.34	7.9
1851	25.03	8.18
1852	24.85	8.1
1853	24.93	8.04
1854	24.72	8.21
1855	24.92	8.11

Fig 2.1 : Data in Excel

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2.2 Data Manipulation

After order all data and put range of years, I used a command =AVERAGE(B2:B11) to see the Moving Average Value for 10 years and get these results :

The screenshot shows an Excel spreadsheet with data from 1848 to 1878. The columns are labeled A through F. Column A is 'year', B is 'avg_temp Riyadh', C is 'avg_temp Global', D is 'Riyadh - 10 years MA', and E is 'Global- 10 years MA'. The 'Global- 10 years MA' column contains a warning icon over cell D3, indicating a potential issue with the formula or data.

	A	B	C	D	E	F
1	year	avg_temp Riyadh	avg_temp Global	Riyadh - 10 years MA	Global- 10 years MA	
2	1848	24.56	7.98			
3	1849	24.8	8.18	24.698	8.026	
4	1850	24.34	7.9	24.743	8.038	
5	1851	25.03	8.18	24.758	8.065	
6	1852	24.85	8.1	24.818	8.071	
7	1853	24.93	8.04	24.728	8.038	
8	1854	24.72	8.21	24.62	7.984	
9	1855	24.92	8.11	24.555	7.991	
10	1856	24.57	8	24.586	7.968	
11	1857	24.26	7.76	24.617	7.975	
12	1858	25.01	8.1	24.652	8.004	
13	1859	24.95	8.25	24.748	8.072	
14	1860	24.94	7.96	24.747	8.087	
15	1861	24.13	7.85	24.782	8.105	
16	1862	23.77	7.56	24.79	8.129	
17	1863	24.28	8.11	24.85	8.156	
18	1864	25.03	7.98	24.96	8.219	
19	1865	25.23	8.18	25.056	8.243	
20	1866	24.92	8.29	25.051	8.288	
21	1867	25.22	8.44	24.971	8.256	
22	1868	25	8.25	24.968	8.235	
23	1869	25.3	8.43	24.993	8.245	
24	1870	25.02	8.2	25.044	8.303	
25	1871	24.73	8.12	25.038	8.277	
26	1872	24.87	8.19	25.016	8.269	
27	1873	25.24	8.35	25.106	8.284	
28	1874	24.98	8.43	25.085	8.278	
29	1875	24.43	7.86	25.08	8.241	
30	1876	24.89	8.08	25.062	8.175	
31	1877	25.47	8.54	25.117	8.181	
32	1878	25.51	8.83	25.126	8.168	
33	1879	25.24	9.17	25.06	8.105	

Fig 2.2 : Results in Excel

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3. Data Visualization

I inserted line chart to show a comparison between city average temperature and global average temperature and put Temperatures (C) on the y-axis and the year range on the x-axis :

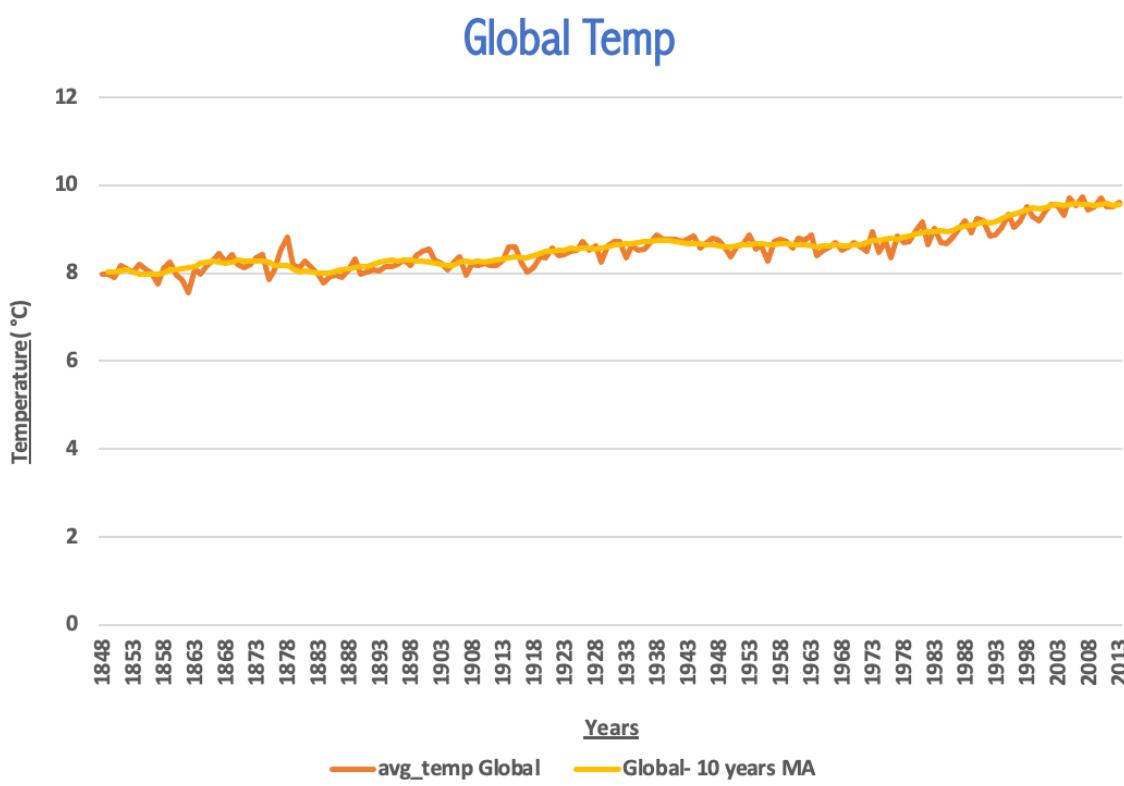


Fig 3.1 : Line chart for Global Temp
City Temp

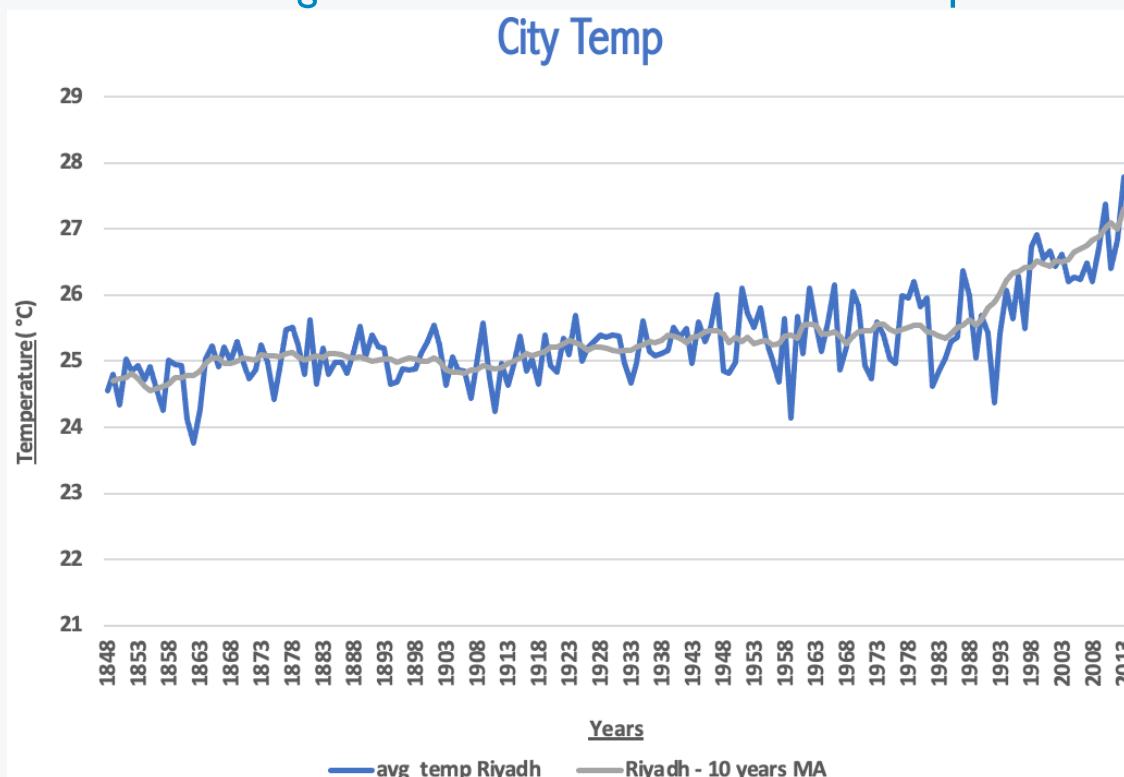


Fig 3.2 : Line chart for City Temp

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3. Data Visualization

Global Temp vs City Temp

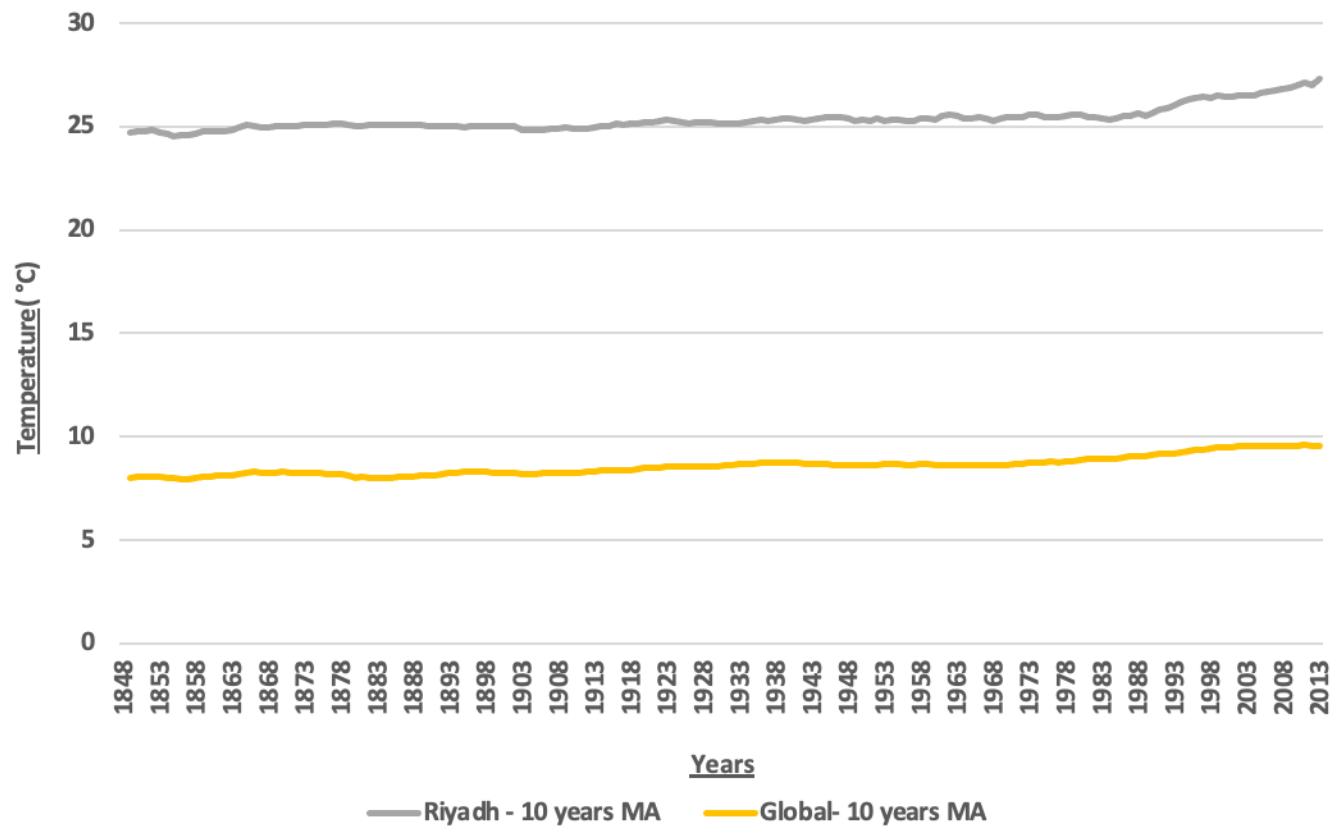


Fig 3.3 : Global vs City Temp

4. Observations

1. Global Average Temperature for 10 year MA varies between 8.5°C to 9.5°C.
2. Riyadh city Average Temperature for 10 year MA varies between 24.6°C to 27.3°C .
3. The Chart of City Vs Global has very big difference in the temperatures
4. Riyadh's weather is much hotter than the global average considering that the temperature has always been greater in the past couple hundred years.
5. Average annual temperature seems to have increased unusually on a global scale over the past 3-4 decades. We notice an upward trend in the rise in temperature.