Project 01: Exploring Weather Trends

Outline:

In this project, I will analyze local and global temperature data and compare the temperature trends in Berlin to overall global temperature trends.

Extracting data from database:

- First step in this project was to read the project summary, instructions and submission requirements.
- Next, Data was extracted from the the data files using SQL script as follows:

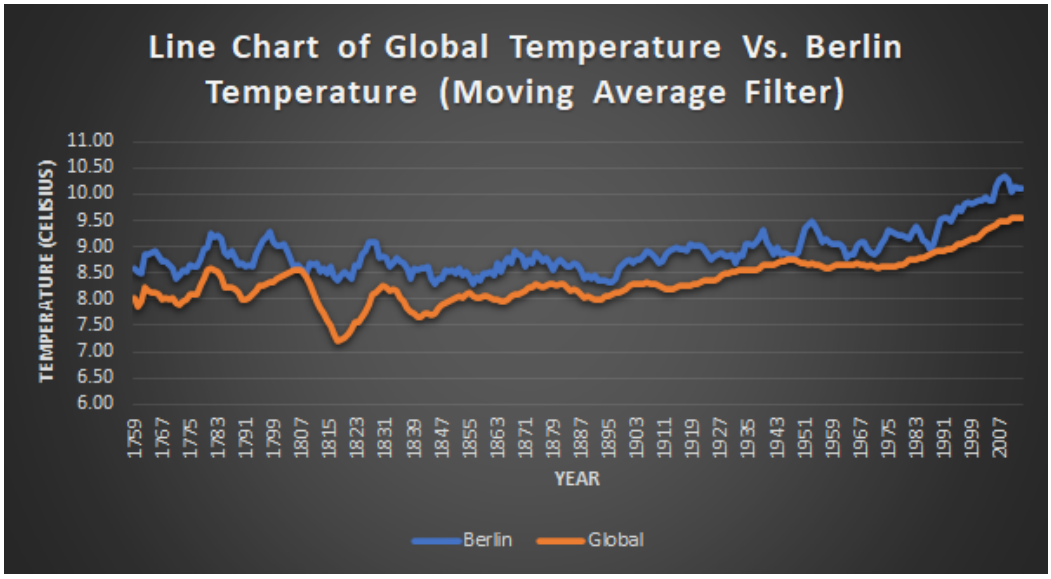
```
SELECT city.year as cyear, city.city, city.country,
city.avg_temp as cavgtemp, global.year as gyear,
global.avg_temp as gavgtemp
FROM city_data city, global_data global

WHERE city.year = global.year
AND city.city = 'Berlin'
AND NOT city.avg_temp IS NULL;
```

- After extracting the data for the city of Berlin and globally, the moving average filter was applied to temperature observations. In this particular case, I applied an average filter for 10 years using the excel summation formula for the first 10 observations and repeated the same formula for all the following observations, for Berlin and globally.

  ```
  =SUM(G2:G11)
  ```

- The next step was to visualize the observations. I chose a line chart as it best represents the data and indicates the trend over years. Consider showing different coloring for each line and giving name to the chart and both axes.



Observations:

- The line graph depicts the temperature change of the city of Berlin-Germany and the global average temperature from 1750 till 2007.
- The line graph clearly shows that Berlin on average is hotter, compared to the global average.
- After applying a moving average filter, the average value of Berlin observations is (8.9 degree celsius) with a standard deviation (0.41). While the global observations average value is (8.34 degree celsius) with a standard deviation of (0.44)
- The difference has been consistent over time, almost the same changes applied to Berlin and globally over time as both temperatures increased. After applying a moving average filter, Berlin temperature observations fluctuate from lowest value (8.29 degree celsius) to highest value(10.34 degree celsius) with a range of (2.05 degree celsius). On the other hand, The fluctuation in global temperature after applying moving average reaches its peak at (9.56 degree celsius) and hits the bottom at (7.20 degree celsius) with a range of (2.35 degree celsius)
- The trend has increased positively over the years. Overall, the world is getting warmer. This results is compatible with the concept of global warming