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Explore Weather Trends

REVIEW

HISTORY

Meets Specifications

Great job!

Hi Udacious,

This is a perfect submission and you managed to pass it on your first try. **Congratulations!**

You demonstrated your ability to retrieve data from a SQL Database and derive interesting, accurate results from the output of your query. You were further able to manipulate this data using external software and create a meaningful visualization to demonstrate your observed results. This is a tremendously important skill and will prove useful throughout your career in data analytics.

Before you move on to your next lessons, take pride in the effort you've put into this project. I hope you found this exercise both challenging and rewarding. Keep up the exceptional work and effort here, and I look forward to seeing you rock those future submissions!

I tried to answer your questions in the last rubric. I hope that helps. If you have further questions, do not hesitate to ask your mentors on Knowledge Hub.

Kind regards,

Analysis

- The SQL query used to extract the data is included.
- The query runs without error and pulls the intended data.

Great work here in extracting the data for your local city and comparing that to global temperatures. Your queries were spot on!

You could also make a simple join to get the whole data in a single query. It would be something like below.

```
SELECT
gd.year,
cd.city,
cd.avg_temp Your_city,
gd.avg_temp World
FROM city_data cd
      JOIN global_data gd ON gd.year = cd.year
WHERE cd.city = 'Ljubljana'
ORDER BY gd.year
```

If you're interested in bolstering your SQL mastery with more questions and puzzles, here are a couple of websites I often enjoy to looking for extra coding practice for SQL:

- <https://www.hackerrank.com/domains/sql/select>

You'll get a chance to practice increasingly difficult questions and learn how to interact with multiple tables at once.

Moving averages are calculated to be used in the line chart.

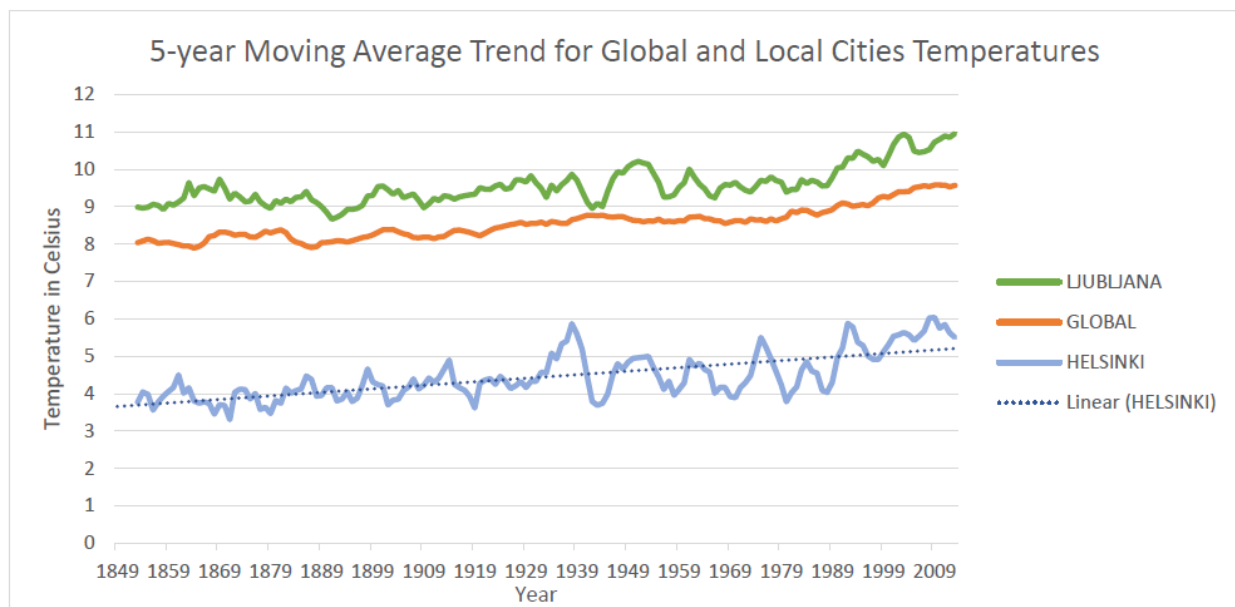
Excellent work here in calculating the 5-year moving average for both Ljubljana and Global temperatures.

Just to let you know that you can also calculate moving averages in SQL using window functions as shown below.

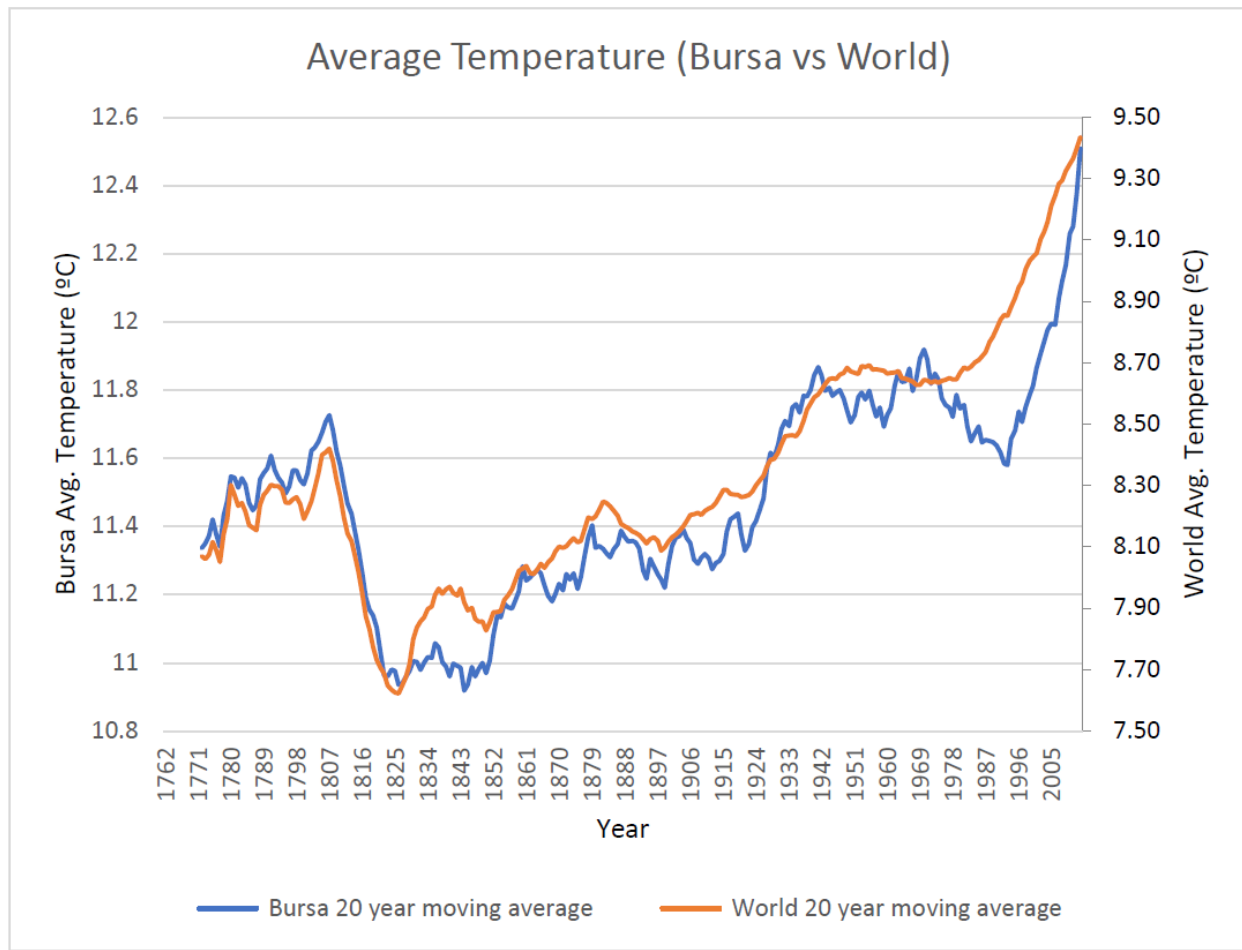
```
select
*,
avg(avg_temp) over (order by year asc ROWS 9 preceding) as moving_average_10
from city_data
where city='Ljubljana'
order by year asc
```

- A line chart is included in the submission.
- The chart and its axes have titles, and there's a clear legend (if applicable).

I'm considering the below plot as your main plot. The line chart included in your submission looks nice! The chart contains a clearly represented title that explains the details of the presented line graph. I especially appreciate that you showed 10-year interval values on the x-axis so that they don't overlap one another - or maybe this was automatic :). You even added the unit in which temperature is measured in the y-axis label. This attention to detail really goes a long way to help communicate your results to an audience.



- Also, this is very subjective but since the temperature difference is mostly stable, you could use a double y-axes plot. When I was doing the project, I did such a visualization which made it easier for me to see the changes (but as I said, this is subjective and there is no ground truth).



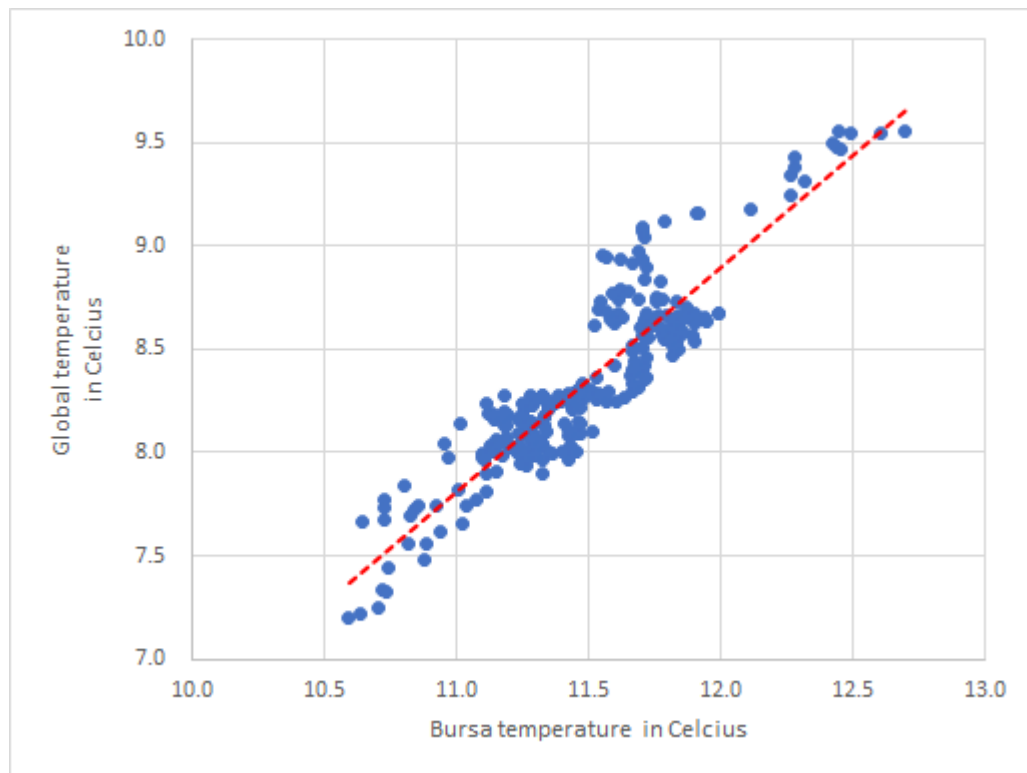
- The student includes four observations about their provided data visualization.
- The four observations are accurate.

Great work in looking at the output of your graph and making observations from them.

(1)"Can you estimate the average temperature in your city based on the average global temperature?"
This question was in the "extra section", but I would really like to get any advice on how to approach this question.

In most cases, the global temperature is highly correlated with the local temperature. You can calculate this correlation using the "**correl**" function in excel. For my city the correlation was 0.91 which means that we can build a regression model to predict my local temperature using the global temperature with a high success. See the scatterplot below. The regression line is the red line we are trying to find

the scatterplot below. The regression line is the red line we are trying to find.



If you check this link, it's written in detail how you can do this:

- <https://www.ablebits.com/office-addins-blog/2018/08/01/linear-regression-analysis-excel/>

My results were as below which means that we can predict local temperature for my city with this formula

My local temperature = Global Temperature * 0.7769 + 5.005

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.917438817
R Square	0.841693982
Adjusted R Square	0.841060758
Standard Error	0.14897754
Observations	252

ANOVA

	df	SS	MS	F	Significance F
Regression	1	29.50111334	29.50111334	1329.219812	4.7513E-102
Residual	250	5.548576892	0.022194308		
Total	251	35.04969023			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	5.0051734	0.178163999	28.09306836	2.60486E-79	4.654279691	5.35606711	4.654279691	5.35606711
X Variable 1	0.77692352	0.021310110	36.45845605	4.7513E-102	0.734054018	0.819804507	0.734054018	0.819804507

A variable 1	U.770934203	U.021310119	30.43640093	4.7313E-102	U.734904018	U.818904307	U.734904018	U.818904307
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As a data analyst, most of the time, we will try to find relations like these in the dataset.

This is a nice starter for regression and you can calculate the same for your city. Good luck!

(2)"How do changes in your city's temperature over time compare to the changes in the global average?" - Is there a better way to observe those changes and/or make calculations, rather than just observe from the chart?

I think the best way to see this is to calculate the temperature difference over the years. When you make a lineplot of the difference, you can see the general trend.

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