

Important Information

- All formatting in this project has been applied manually.
- The formatting style is based on the guidelines from:
[IBM Jupyter Markdown Cheatsheet](#)
- This document will include topics such as:
 - A brief description of AI usage.
 - A 300-500-word log describing the compulsory work and my experience.
 - A link to my public GitHub repository and streamlit app
 - A Table of contents with links to the place in the document
- My GitHub repository: [My GitHub Repository](#)
- My Streamlit app: [My streamlit App](#)



AI Usage

This project included selective use of AI tools to support learning, debugging, and documentation.

Below is a transparent description of when and how AI assistance was used.

- **Looking up errors:**

When encountering error messages I did not understand after reading them, I asked AI to explain their meaning and possible causes.

In some cases, I implemented the suggestions provided; in others, I preferred to verify solutions independently through web searches or documentation.

- **Re-writing and proofreading:**

Writing documentation can be challenging. I first drafted my own takeaways, explanations, and reflections, then asked AI to help check spelling, grammar, and sentence flow.

The re-phrasing stayed close to my original wording, keeping my opinions and interpretation intact. Minor spelling errors or stylistic differences may remain intentionally.

- **Writing cell documentation:**

Writing cell documentation is difficult in way for everyone to understand.

I used AI to help me and write clear and instructive documentation for the code used in the cells.

✨ Personal Takeaways

This assignment expanded on earlier project work by combining **API integration**,

data analysis, and **dashboard development** into a single, coherent workflow.

The process taught me to connect several technologies – Open-Meteo, Pandas, and Streamlit – in a practical and reproducible way.

- **Improved Data Handling:**

I learned how to retrieve and structure external datasets through APIs instead of static CSV files,
and to design flexible download functions for reuse across cities and years.

- **Analytical Techniques:**

Implementing *Direct Cosine Transform*, *STL decomposition*, and *Local Outlier Factor*

helped me understand practical anomaly-detection and seasonal-trend methods.

- **Visualization & Interpretation:**

Combining temperature, precipitation, and production data in clear visual plots made me more aware
of the importance of communication in analytics – not just computation.

- **Integration with Streamlit:**

Expanding the Streamlit app and managing page order, interactivity, and caching
gave me hands-on experience with web deployment and user interface design
for analytical tools.

- **Version Control & Workflow:**

Working through GitHub branches for temporary updates
reinforced how valuable structured versioning is for collaboration and assessment cycles.

Overall, this project connected the technical and creative aspects of data science –
from engineering the data pipeline to presenting insights visually.

It strengthened both my analytical reasoning and my ability to design maintainable, user-friendly tools.