Capstone Project Report

This project focuses on collecting live weather data from a public API, storing it locally without using SQL databases, visualizing the last 30 days of data for a single city, and performing basic machine learning forecasting.

Objectives:

- Fetch live weather data from a public API (OpenWeatherMap).
- Store weather data locally using CSV/JSON instead of SQL databases.
- Visualize weather trends for the last 30 days for a single city.
- Apply basic Machine Learning prediction models for weather forecasting.
- Submit project as an individual contribution with GitHub repository link.

Methodology:

1. Weather data is fetched using the OpenWeatherMap API in JSON format.
2. Data is stored in a structured CSV/JSON file for easy retrieval and analysis.
3. Visualization is performed using Matplotlib/Pandas to analyze the last 30 days' weather trends for a chosen city.
4. Machine Learning models (Linear Regression and Random Forest) are used to forecast temperature trends.
5. The code is organized into Python scripts, and the GitHub repository link is provided in this report.

Tools & Technologies Used:

- Python (requests, pandas, matplotlib, scikit-learn)
- CSV/JSON file storage
- OpenWeatherMap API
- GitHub for code repository

Results & Findings:

The project successfully fetched weather data, stored it locally, visualized 30-day trends, and applied machine learning models for forecasting. Visualizations provided insights into temperature and humidity trends, and ML models demonstrated basic predictive capabilities.

GitHub Repository:

URL: https://github.com/your-username/weather-capstone (Replace with your actual repository link)

Conclusion:

This individual capstone project demonstrates the process of fetching, storing, visualizing, and predicting weather data without using SQL databases, thereby providing a complete end-to-end data engineering and machine learning pipeline.