Technological Institute of the Philippines
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College of Information Technology Education

IT 005 – Integrative Programming and Technology

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WEATHER DATA ANALYZER	

1. Project Overview

The Weather Analyzer is a web-based dashboard that provides real-time and historical weather data for selected cities in the Philippines. It uses free weather APIs (Open-Meteo, wttr.in, etc.) to display important weather parameters such as temperature, humidity, precipitation, wind speed, cloud cover, and pressure.

The project allows users to:
- Select a city or region in the Philippines
- Choose a historical time range (7–60 days)
- Analyze trends, averages, and data distributions
- View current conditions, historical charts, precipitation patterns, and a 7-day forecast
- Get weather alerts based on extreme conditions

2. Project Objectives

- To create a simple and interactive dashboard for analyzing Philippine weather data.
- To visualize historical and real-time weather information using charts and tables.
- To give users insights into weather patterns (average, max, min, standard deviation).

3. Features

- City Selection – Users can select from major Philippine cities (Manila, Cebu, Davao, Baguio, etc.).
- Parameter Selection – Analyze temperature, humidity, pressure, precipitation, wind speed, and cloud cover.
- Historical Weather Trends – Line chart showing weather changes over chosen days.

- Current Weather Conditions – Doughnut chart and stats for real-time conditions.
- Data Distribution Analysis – Histogram of selected weather parameter.
- 7-Day Forecast – Forecast grid with icons, temperatures, and precipitation.
- Precipitation & Weather Patterns – Combined bar and line chart (rainfall vs temperature).
- Recent Data Table – Tabular view of the latest weather readings.
- Weather Alerts – Automatic alerts for heat, heavy rain, storms, strong winds, or high humidity.

4. Tools & Technologies

- HTML, CSS, JavaScript – Frontend development
- Python – Data handling and future backend integration
- Chart.js – Data visualization (line, bar, doughnut charts)
- Open-Meteo & wttr.in APIs – Weather data sources (no API key required)
- Responsive Design – Works on desktops and mobile devices

5. Expected Output

- A fully functional dashboard that loads real-time and historical weather data.
- Easy-to-read charts, tables, and forecast visuals.
- Alerts when extreme weather conditions are detected.

6. Timeline (Sample)

Phase	Task	Duration
Planning	Define scope, cities, and data sources	1 week
Development	Build UI, API integration, charts	2 weeks
Testing	Debug errors, test city selection & data	1 week
Deployment	Launch project as a web dashboard	1 week

7. Limitations

- Depends on free APIs, so some data might be estimated if API calls fail.
- Internet connection is required for real-time updates.
- Forecast accuracy depends on third-party API sources.