

Milestone 1

In this milestone we have successfully implemented API requests from the weather API Open Mateo. Also we have basic functioning components for UI.

Weather API:

Key Features

Geocoding and Forecast Retrieval:

The system can fetch a location's data using a name and country identifier and then retrieve today's weather forecast for that location, including temperature, wind speed, precipitation, and other relevant metrics.

Encapsulation of API Details:

By abstracting the API calls into the OpenMeteoAPI class and further encapsulating the access through WeatherDatabase, the design promotes separation of concerns and simplifies maintenance.

Error Handling:

The code includes basic error handling, catching exceptions and logging error messages, thus ensuring the application's robustness against failures in API calls.

- While the current implementation provides a solid foundation, enhancements in error handling, testing, and asynchronous processing could further improve its robustness, maintainability, and performance. Which would be achieved in forthcoming iterations and milestones.

UI:

For designing our UI we initially made a wireframe for simplifying our webpage. Following that we made the GUI Mockup using MockPlus. And then finally we started with html and css for bringing our wireframe and mockup to life. As a cherry on the cake we have added little JavaScript in the webpage.

- As of now we have basic layout of the webpage, however there is some work that needs to be done in upcoming milestones. We plan on adding a minimalist navbar, footer and also we are yet to settle on the logo for the ChatBot.

Research:

Our research explores various methods for integrating Java-based chatbot logic with web interfaces, focusing on the compatibility of Java with modern web technologies such as HTML and CSS. The document evaluates three approaches: *Java Applets*, *Jakarta Server Pages (JSP)*, and a custom *HTML-JavaScript-PHP-Java bridge*, each with its own set of advantages and disadvantages.

We conclude that the **HTML-JavaScript-PHP-Java** bridge offers the most effective and straightforward solution for web integration, providing clear separation of concerns between UI and chatbot logic, enabling concurrent development, and ensuring ease of use with the added benefit of aligning with the developer's current educational focus on both server-side and client-side web development.

API Research:

Research on Weather APIs, specifically focusing on AmbeeAPI and Open-meteo, underscores the critical role of APIs in providing comprehensive weather data for various applications. AmbeeAPI excels in delivering hyper-local weather data, historical weather patterns, and robust developer support, making it a versatile choice for industries like agriculture, tourism, and transportation. Its ease of integration, scalability, and flexibility cater to developers' needs for customized weather data solutions. Open-meteo, on the other hand, offers global weather forecast coverage, hourly forecasts, and access to historical weather data, supporting multiple data formats for developer convenience. Both APIs emphasize ease of use, reliability, and comprehensive documentation to aid developers in integrating weather data into their applications effectively, highlighting the evolving capabilities and critical importance of weather APIs in leveraging meteorological data for diverse applications.