

# Weather Forecast App

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## Abstract

The Weather Forecast App is a desktop-based Java application developed using JavaFX. It retrieves real-time weather data from the OpenWeatherMap API and displays it in a user-friendly interface. The app demonstrates practical implementation of API integration, JSON parsing, and graphical UI development in Java.

## Introduction

Weather forecasting is one of the most useful applications of modern technology. This project aims to create a simple yet efficient application that allows users to check real-time weather conditions of any city. It emphasizes working with APIs, handling JSON responses, and building an interactive UI using JavaFX.

## Tools Used

- Java (Core Programming)
- JavaFX (Graphical User Interface)
- OpenWeatherMap API (Weather Data Provider)
- Gson/Jackson (JSON Parsing Libraries)

## Steps Involved in Building the Project

1. Registered on OpenWeatherMap and obtained an API key.
2. Implemented HTTP requests in Java to fetch weather data.
3. Parsed JSON responses using Gson/Jackson.
4. Built a JavaFX interface to display weather details such as temperature, humidity, and conditions.
5. Integrated icons for weather conditions (e.g., sunny, rainy, cloudy).
6. Added error handling for invalid city names and network issues.

## Conclusion

The Weather Forecast App demonstrates the integration of real-time data retrieval, JSON parsing, and interactive UI design. It showcases how APIs can be effectively utilized in Java applications to build practical and user-friendly solutions.