## **C# Final Project: Weather Dashboard**

By: Benjamin Chin & Elliott Weiler

## **Overview**

Weather Dashboard is a WPF desktop application that retrieves and displays current weather and a 7-day forecast for U.S. cities using the OpenWeatherMap API. Key features include:

* **City Search:** Enter a city, state, and country code (e.g. Columbia,MO,US) to fetch weather data.
* **Current Conditions:** Shows today’s temperature, conditions, and icon.
* **7-Day Forecast:** Displays daily high temperatures, conditions, and icons in a uniform grid.
* **Favorites Management:** Add up to three favorite locations for one-click access; remove favorites as needed.
* **Error Handling:** Catches network, parsing, and user-input errors and displays user-friendly messages.

## **Usage Instructions**

1. **Prerequisites:**
   1. Windows 10/11 desktop
   2. .NET 7.0 Runtime (installed via [dotnet.microsoft.com](https://dotnet.microsoft.com/))
   3. Internet connection for API calls
2. **Installation:**
   1. Clone or unzip the project folder.
   2. Ensure Assets/Icons/\*.png are present under bin/Debug/net7.0-windows/Assets/Icons after build.
   3. Add your OpenWeatherMap API key in [WeatherService.CS](http://weatherservice.cs).
      1. This is provided already so do not worry.
3. **Running the Application:**
   1. Open the solution in Visual Studio 2022.
   2. Build (Ctrl+Shift+B) and run (F5).
   3. In the **Location** box, type a city in the format City,ST,US and click **Search**.
   4. View the current temperature, conditions, and 7-day forecast.
   5. Click **Add to Favorites** to save up to three locations. Select a favorite and it will show you the city's current temperature and a 7 day forecast with descriptions.
   6. Use **Remove** to delete a selected favorite.

## **Test Cases**

### **Positive Test Cases**

1. **Valid City Input:**
   * Input: Columbia,MO,US and click **Search**.
   * Expected: Current temperature and conditions display; 7-day forecast grid populates with icons, dates, and descriptions.
2. **Favorites Workflow:**
   * Input: Athens,GA,US, and then **Add to Favorites**.
   * Select the saved Athens,GA,US in the list.
   * Expected: Forecast reloads for Athens, demonstrating favorites retrieval.

### **Negative Test Cases**

1. **Invalid City Format:**
   * Input: NowhereLand (missing state/country codes) and click **Search**.
   * Expected: Error message "Incorrect location format." appears.
2. **Favorites Limit Exceeded:**
   * Add three cities to favorites, then attempt to add a fourth.
   * Expected: Error "Max 3 favorites. Remove one first" is displayed; fourth is not added.

## **Acknowledgments**

* **.NET 7.0:** Microsoft’s open-source developer platform for building WPF apps.
* **WPF:** Windows Presentation Foundation, for desktop UI.
* **Newtonsoft.Json:** JSON serialization/deserialization library.
* **OpenWeatherMap API:** Data source for current weather and forecast.
* **Visual Studio 2022:** IDE for development and debugging.