Assignment #6 – Android Weather App
ECE 422C (Prof. Edison Thomaz) - The University of Texas at Austin – Fall 2023

Assignment Due Date: November 30th 2023
Points: 100pts (+ 30 pts with bonus activities)

In this assignment, you will build a weather app for Android to help you gain practical experience with Java on a mobile platform. The app should display the daily average temperature forecast for the upcoming week (i.e., 7 upcoming days) from the day the app runs. To achieve this, you will have to:

1. Create a networking request to retrieve data using a weather forecast API
2. Use a JSON parser to interpret and retrieve the data coming back from the API
3. Calculate temperature averages for each day
4. Build a simple user interface to display the averages for each day

You will build the application using Android Studio, which you should install in your computer. When running and testing the application, you should use the emulator.

In order to have access to weather data, you should use the Open-Meteo Weather Forecast API, which is located at https://open-meteo.com/en/docs. The API call that gives you all the information you need is:

https://api.open-meteo.com/v1/forecast?latitude=30.28&longitude=-97.76&hourly=temperature_2m&temperature_unit=fahrenheit

(The latitude and longitude of Austin are 30.28 and -97.76 respectively)

To call this API, you need to rely on what you learned in the networking lecture. Consult the Java SDK documentation and other online resources to learn how to parse JSON data. This is an opportunity for you to "learn-how-to-learn", a practice you must become accustomed to in order to keep up with technological developments after you graduate.

To display the forecast temperate averages, build a simple interface using TextViews.

Submission and grading

Zip all your files and name it `Assignment_6_UTEID.zip` and submit through Canvas. Make sure you do not turn in your test code. To get credit for this assignment, you will need to:

- Choose a time slot to meet with one of the TAs sometime between **Nov 30th** and **Dec 4th** to show your working application. The TAs will circulate a Google Sheet for checkout sign-up. When meeting with the TA, be prepared to show the source code of your application and answer questions about your design and implementation choices.

- **There will not be a late-submission/checkout for this assignment past Dec 4th since it is the last day of class.**

Bonus Activities

To encourage you to explore the many possibilities of this assignment (and give you the chance to gain some extra points), we will have 3 optional bonus activities, each worth 10 extra points.

Bonus 1: Once you explore the documentation, you will see that the Open-Meteo API is incredibly rich. For bonus points, make your app more fully featured by adding any two of the following forecast measures in the user interface: humidity, wind, pressure, visibility, rain. (10 pts.)

Bonus 2: There are many ways to display weather information. You may keep things simple and display all the content in text, or you might draw graphs, charts and visualizations to show the data. As an incentive to more interesting designs, we will distribute extra points (at our discretion) for more sophisticated interfaces. If you are not sure how to begin, check existing weather applications for Android and iOS for inspiration. Time to flex your app design skills! (10 pts.)

Bonus 3: Weeks ago, you learned how to incorporate machine learning into a Java application using the Weka framework. For this bonus activity, incorporate a “tomorrow” average temperature predictor feature into your app by training a machine learning classifier. You should train your predictor with a minimum of 100 data points. (10 pts.)