Coursework Report

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1 Introduction

This is a report about the Mobile Applications Development coursework. The purpose of this app is to relay to the user real time weather statistics about the city of Edinburgh.

The inspiration for this App comes from similar default weather apps provided on multiple devices, sharing most of it's similarities to the the default weather app provided in **iOS version 11.2.5**.

2 Software Design

2.1 User Interface

The Application UI is designed to be user friendly and instinctual, immediately displaying the weather values after the app is opened.

2.2 Data Entry

The Application fits dynamically on any compatible device screen by employing the "wrap_content" option in **Constraint layout**.

2.3 Data Flow

The Application gets its data in JSON format from free subscription option given by the weather data API service known as **OpenWeatherMap**[1].

2.4 Hardware

The Application will run on most devices that meets its requirement. The App was made on **API version 23**.

3 Design Methodology

This Application was worked on by one person, for this reason the method of development chosen is the **Waterfall design methodology**. The development followed 4 sequential steps.

3.1 Analysis

What should the Application do, based on the needs of potential user bases. And other similar apps currently available in online stores such as: the app store(IOS) and the goodle store(Android).

3.2 Design

Visual display of the application on the device of choice. With focus being put on it being user friendly and intuitive to a potential user base.

3.3 Implementation

Modeling and coding the Application itself. Starting a subscription to a weather data database[2].

3.4 Testing

Testing of the Application on a wide variety of devices in order to look for any visual bugs or issues. Devices tested: **Pixel API 23**,**Pixel 2 API 23**,**Nexus S API 23**. An internet connection required for testing.

4 Application Implementation

This Application was coded using the developing environment **Android Studio version 3.0.1**. Minimum API level is 23.

Text Boxes mainactivity: Nine separate text boxes on the main activity for (location, temperature, description, wind, sky, pressure, humidity, sunrise, sunset) populate themselves with data from the Openweather database[3], displayed upon staring the App.

Refresh Button mainactivity: On click it refreshes all the text box values in the main activity.

About Button mainactivity: On click it takes the user to the second activity.

Text Boxes activity2: Five separate text boxes on the second activity display information about the weather API used, the database itself and the database key.

Image activity2: Image implemented in the second activity window.

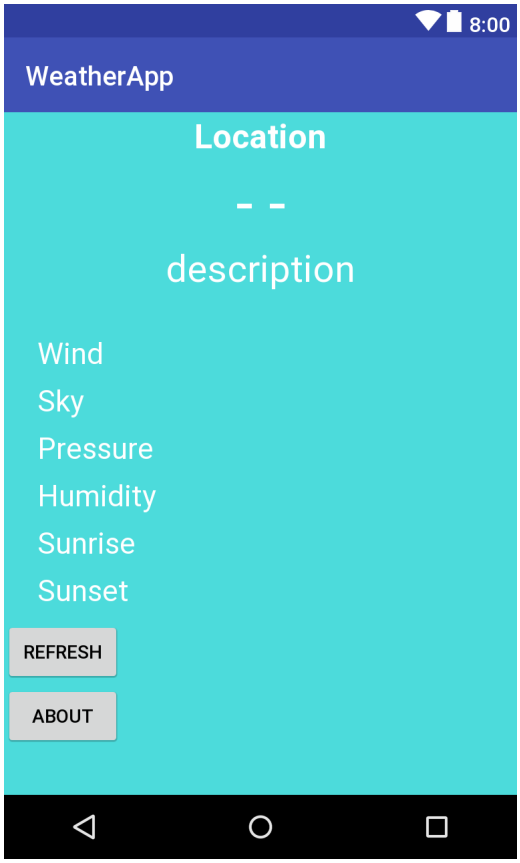

Figure 1: Main activity

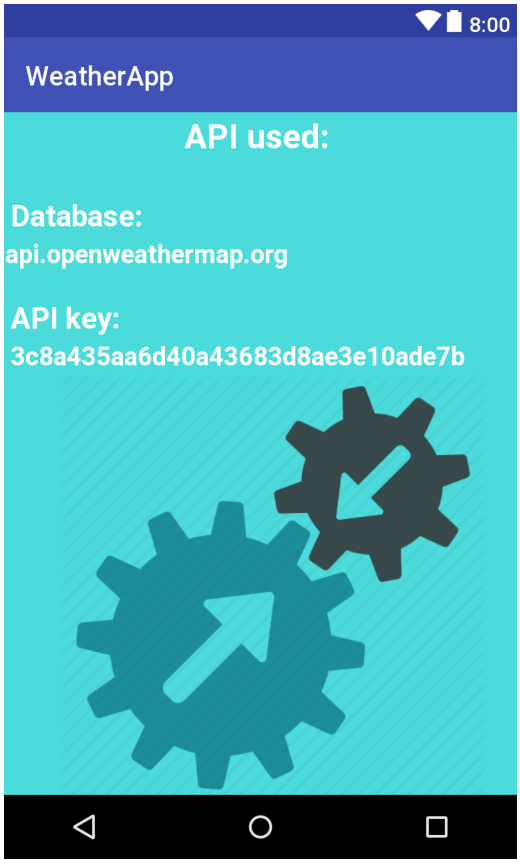

Figure 2: Second activity

5 Critical Evaluation

When comparing this Application with other similar apps already available you can spot critical differences. For example most other apps have an interactive graphics display changing with the data given. Other major feature other apps have is future weather predictions for an entire week in advance, where as this app only offers the current weather data. Store ready apps have the ability to find your current location, as well as to show, save other locations the user may not currently be near.

5.1 Possible Improvements

Possible future improvements could be made by upgrading the the subscription for the Openweathermap database where we get our App data. The current free subscription offers Weather API data updates every 3 hours with a 95.0% availability where ass the 2,000 USD per month package updates every 10 minutes and has a 99.9% availability rate, which most store ready maps see the bare minimum requirements for a competitive weather app. Other improvements could be made by also paying for a **Historical weather collection**[2] which does not have a free variant and it's lowest price is set at 150 USD per month.

Other future improvements could add more categories such: minimum temperature, maximum temperature, chance of snowfall, chance of rainfall, UV indedx and more.

The most vital improvement is giving people the option to select the city or region they want to get the weather conditions for not just limiting them to one.

6 Personal Evaluation

I did all the base feature i wanted the app to have eg:location, temperature, description, wind, sky, pressure, humidity, sunrise, sunset. A refresh option and an about button. But i could not implement a feature that tracks the users location or a feature that lets the user chose the the location they want weather statistics for. Another feature i could not get to work is an interactive picture display in the main activity window of the app that changes based on the weather conditions eg: an image of a sun appears when he weather is described as sunny.

References

[1] Openweathermap-key, "http://api.openweathermap.org/data/2.5/
edinburgh,ukappid= 3c8a435aa6d40a43683d8ae3e10ade7b."

[2] Openweathermap-prices, "https://openweathermap.org/price."

[3] Openweathermap-database,
"https://openweathermap.org/current."