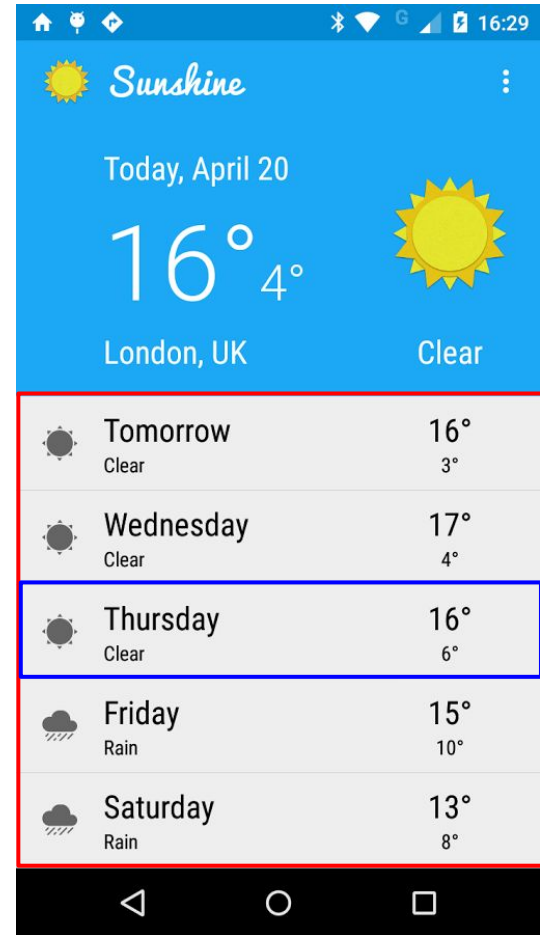# Android
Week Four

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So Far …

- XML
- Activity
- View
- ViewGroup
- RecyclerView

This Week

- Open Weather Map API
  - Sign Up
  - Generate API Key
- Networking
  - Build a URL
  - Open HTTP Connection
  - Read from Input Stream
  - Parse JSON Response

Open Weather Map API

1. Sign Up
   a. https://home.openweathermap.org/users/sign_up
2. Generate API Key
   a. https://home.openweathermap.org/api_keys
3. Check API Documentation
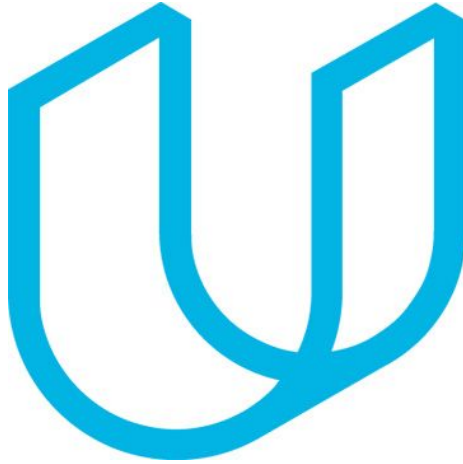   a. https://openweathermap.org/api

Current Weather Data API

- Base URL
  - http://api.openweathermap.org/data/2.5/weather?q={city name}
- Need API key at the end
  - &appid=<API_KEY>
- Documentation: https://openweathermap.org/current

How to Store API Keys

- API keys should be kept private
- Add to gradle.properties (Project Properties)
  - OpenWeatherMapApiKey="<API Key>"
- Add to build.gradle (Module: app)
  - buildTypes.each {
  - it.buildConfigField **'String'**, **'OPEN_WEATHER_MAP_API_KEY'**, OpenWeatherMapApiKey
  - }
- Access API Key
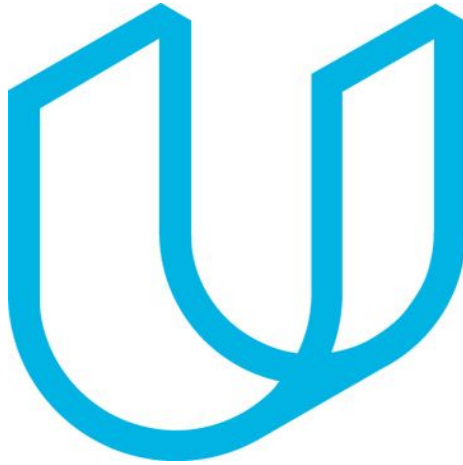 - String API_KEY = BuildConfig.OPEN_WEATHER_MAP_API_KEY;

Networking

https://www.youtube.com/watch?v=1-s182saJsg

https://www.youtube.com/watch?v=LzDn3T8RAvM

HTTP

https://www.youtube.com/watch?v=QghbZkks3Dw

1. Add Permissions

- Networking requires permissions such as
  - INTERNET
  - ACCESS_NETWORK
- All permissions needs to be declared in AndroidManifest.xml
- Example
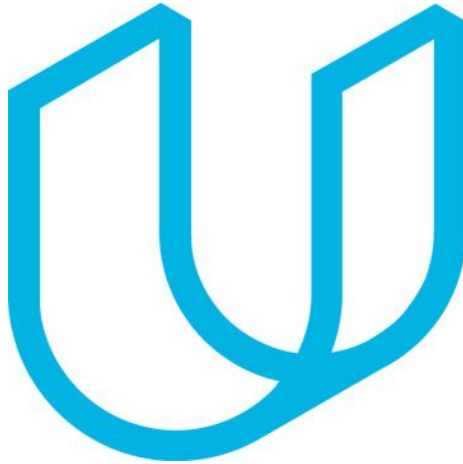 - `<uses-permission android:name="android.permission.ACCESS_NETWORK_STATE" />`

2. Build URL

- Construct a URL String
  - Base URL + query + API KEY
- Initialize URL
  - URL url = new URL(urlString);
- Catch Malformed URL Exception

Logging

- Log
  - Message sent to log output to record state or errors that occured within an app
- Example
  - Log.v(String log_tag, String log_message);
- Different Levels
  - Verbose: v
  - Debug: d
  - Info: i
  - Error: e
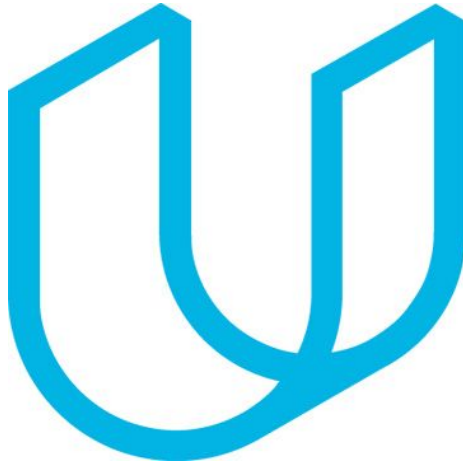- Check Logcat

HttpURLConnection

https://www.youtube.com/watch?v=R2cfC9hCpO4

https://www.youtube.com/watch?v=gPdtcUadSNk

InputStream

https://www.youtube.com/watch?v=CTz6gfx44II

3. Make HTTP Connection

- Returns a JSON response
- HttpURLConnection
- InputStream
- Open connection using URL
- Set request type and read and connect timeout

Next Week

- Finish implementing Networking methods
  - readFromStream()
  - extractFromJSON()
  - fetchWeather()
- BufferedReader
- JSON