Android Projects A3_1 & A3_2

This repository contains two Android assignments:

1. **A3_1: Matrix Calculator**
2. **A3_2: Wi-Fi RSS Logger**

📐 A3_1: Matrix Calculator

📝 Overview

A native-backed Android app that performs element-wise matrix additions, subtractions, multiplications, and divisions on two matrices. The UI is built using **Jetpack Compose**, and the computation is done in C++ via JNI using the `valarray` vector class.

🔧 Features

- Supports any square matrix dimension
- Accepts two matrix inputs from the user
- Supports operations: **Add, Subtract, Multiply, Divide**
- Uses C++ `std::valarray` for performance
- JNI interface for Kotlin <-> Native communication

📁 Structure

```
A3_1/
├── settings.gradle
├── build.gradle.kts (project-level)
└── app/
    ├── build.gradle.kts
    ├── src/main/
    │   ├── cpp/
    │   │   ├── CMakeLists.txt
    │   │   └── MatrixCalculator.cpp
    │   ├── java/com/example/a3_1/
    │   │   └── MainActivity.kt
    │   ├── res/values/
    │   │   └── strings.xml
    │   └── AndroidManifest.xml
```

🛠️ Build Instructions

1. Open project in **Android Studio**
2. Ensure **NDK** and **CMake** are installed
3. Sync Gradle
4. Build → Clean Project → Rebuild

▶️ Usage

1. Enter matrix dimension
2. Enter two matrix values (row-major, space/newline-separated)
3. Choose an operation: Add / Subtract / Multiply / Divide
4. Tap **Calculate** to see results

📶 A3_2: Wi-Fi RSS Logger

📝 Overview

This app logs Wi-Fi RSSI (Received Signal Strength Indicator) values from surrounding Access Points (APs) and displays them as a 10×10 matrix for each of **3 selectable locations**.

🔧 Features

- Spinner to choose **Location A, B, or C**
- Button to **Start/Stop** signal logging
- Logs strongest RSSI from WiFi scan
- Maintains last **100 values per location**
- Displays data in a 10×10 matrix format