ANDROID MBED PICONET STARTER KIT

WITH SENSOR DATA AGGREGATION EXAMPLE

PURPOSE OF THIS KIT

This starter kit was written as the foundation for a simple master/slave communication network between Bluetooth-enabled Android devices.

Alternatives exist, such as:

- https://code.google.com/p/p2p-communication-framework-for-android/

GETTING STARTED

1. PREPARE ANDROID DEVICE(S)

1.1 RESET TO FACTORY DEFAULTS

For the HTC Desire C go to *Settings » Storage » Factory data reset* and check "*Erase all data*".

1.2 INITIALIZE DEVICE

Follow the presented wizard and enter default localization settings etc. It is recommended you set the locale to English (Netherlands). An installation with Wifi-only is assumed. You can bind to Dropbox at this point, it will give you unconditionally reward you with 25GB extra storage space for two years.

1.3 UPDATE DEVICE

Updating ensures a stable development environment for your device(s). For the HTC Desire C go to *Settings » About » Software updates » Check now*. Continue this cycle until no more updates are available (process can take up to 30 minutes).

1.4 ENABLE DEVELOPER MODE

For the HTC Desire C, go to *Settings » Developer options* and check "*USB debugging*" and "*Stay awake*". You might also want to disable all sounds.

2. SETUP DEVELOPMENT ENVIRONMENT

Android Studio will soon be the only official supported IDE to develop for the Android platform, featuring better integrated debugging compared to Eclipse/ADK, out-of-the-box support for teams and a thing called Gradle build which you will probably both love and hate. You can port the project to Eclipse, but take note of the project dependencies.

The Starter Kit was developed on Windows, though Android Studio is platform independent.

1.1 INSTALL JDK 7

Oracle Java Development Kit 7 or higher is required for Android Studio. Details on installation for your platform can be found on http://www.oracle.com/technetwork/java/javase/downloads/jdk7-downloads-1880260.html.

1.2 INSTALL ANDROID STUDIO

Install Android Studio for your platform. Installation for Linux distributions is slightly more complicated than Windows installations, be aware you should probably run the *adb* executable in the SDK folder as root under Linux.

https://developer.android.com/sdk/installing/studio.html

1.3 CONNECT ANDROID DEVICE(S)

When connecting your device to a computer, Android will ask which mode the phone should be put into. Please choose "USB debugging" here.

Windows only: Download and install HTC Sync Manager. This will install the required drivers for Windows. Linux drivers are natively supported.

3. DOWNLOAD AND BUILD PROJECT

Open the project in Android Studio and try to build it! **Note: always use a new UUID in AbstractBluetoothService.java for each project! (http://www.famkruithof.net/uuid/uuidgen)**

A WORD ON ANDROID DEVELOPMENT

Before you continue with Android development, make sure you understand the following Android concepts:

- Activities, Services and Intents
  https://developer.android.com/guide/components/fundamentals.html

- Layout files and resource ID's
  https://developer.android.com/guide/topics/resources/accessing-resources.html
  https://developer.android.com/guide/topics/ui/declaring-layout.html

- Threading and the Java Runnable
  https://developer.android.com/guide/components/processes-and-threads.html
  http://www.vogella.com/tutorials/AndroidBackgroundProcessing/article.html

- Listeners, broadcast receivers and handlers
  https://programmers.stackexchange.com/questions/84732/what-is-the-difference-between-callbacks-and-listeners
  https://developer.android.com/reference/android/content/BroadcastReceiver.html

- Limitations on Bluetooth P2P and WiFi (ad hoc) networks