**Coding is Fun**

**Session 7 : Android**

**Mobile Devices**

1. **A Mobile Phone IS a Computer**

**Processing :** CPU . . . GPU . . . RAM . . . Flash Storage

**Inputs :** Keys, Touch Screen, Microphone

**Outputs :** Screen, Speaker / Headphones

**Communication :** Mobile Network, WiFi, USB, Bluetooth

1. **Writing Apps**

**An App IS a Computer Program**Like programming a Raspberry Pi

**Write it on a PC . . . Transfer it to the Mobile Phone**Like programming a PIC

1. **Using an Integrated Development Environment**

This one’s called Eclipse

1. **No Mobile Phone?**

**Not a problem!**Use an Emulator  
A software phone – on the PC

1. **Some Apps**

**Sprite Sorter**Like Scratch

**Space Odyssey**Like Raspberry Pi

1. **Which Language?**

**Java**Like JavaScript – in Code Academy – with a few extras!

**All the Software you need is FREE!**

**Want to try this yourself?**

**Take Your Time – You’ll Get There!**

1. **Get someone to HELP**

Installing everything is a bit tricky  
Though it’s easier now than it used to be!  
So **follow these notes  
Don’t worry** if they look a bit complex  
Just follow things through **step by step**

These notes assume you are on a **Windows PC**  
And are logged in as an **Administrator**

1. **Java Development Kit (JDK)**

Use **Google** to search for **“JDK”**  
Look for a link to **“Java SE Downloads”**  
This takes you to a **“Java SE Downloads”** page  
Look for the **“Java SE 7u21”** section (or 7u22, 7u23 . . .)  
And click the **“JDK Download”** button  
You need the **Windows** link - x86 for 32-bit / x64 for 64-bit  
Download and install it – it will install Java FX 2.0 (or later) as well

1. **Install 7Zip**

Go to [**http://www.7-zip.org**](http://www.7-zip.org)Download the package and install it  
Get the right package – is your version of Windows  
32-bit (x86) or 64-bit(x64)

1. **Android Developer Tools Bundle for Windows**

Go to [**http://developer.android.com/sdk/index.html**](http://developer.android.com/sdk/index.html)Click the link to **Download the SDK ADT Bundle for Windows**  
**Tick the box** to agree the terms and conditions, **pick 32-bit or 64-bit** (depending on which version of Windows you have) and **click the button** to **download / save** the bundle  
Use **7Zip** to extract the folder in it – and all its contents – to the root of your C-drive (or anywhere else convenient on your computer) – do **NOT** be tempted to change any of the files / folders in it or move them around  
Find the **Eclipse Application** in the **Eclipse** folder within that folder  
**Copy it / Paste a link** to it onto the **Desktop**

**Note:** using 7Zip is recommended, but might not be essential.  
Other utilities (including the facilities built into some versions of Windows) have caused problems with unzipping some versions of Eclipse, but 7Zip seems to work reliably.

**Note:** I’ve also seen issues with downloading the bundle with some web browsers – when I’ve had problems, Firefox always seems to have worked!

1. **Eclipse / Android Development Tools**

**Start Eclipse** – from the link on the Desktop

1. **Android SDK Manager**

This is the module that downloads / installs any extra stuff needed by Eclipse / the Android Tools. If you have any problems with versions of Android / physical devices you are trying to run apps on, you may need to use this to install extra stuff to match your hardware.

**Window / Android SDK Manager** from within Eclipse

1. **Create an Android Virtual Device**

This is only needed if you want to **run your App on a software Emulator**Rather than on a physical device

In **Eclipse**, go to **Window / Android Virtual Device Manager**  
**Click the Device Definitions** tab  
**Click on a device type** (**3.7” WVGA** is a good starting point)  
**Click Create AVD**  
Probably leave all the **default choices** as they are  
**Click OK**

1. **Install Drivers / Prepare Your Mobile Phone**

This is only needed if you want to **run your App on a physical device**  
Rather than on a software Emulator

Install whatever **device drivers** are needed to connect the phone via a cable to a USB port on the PC  
This will depend on what sort of device it is  
The device should come with instructions for this

**Enable USB debugging  
E.G.** go to Home / Menu / Settings / Developer Options  
And tick the **“USB debugging”** box

1. **What do all these things do?**

**Java Development Kit**All Android Apps are written in Java  
This provides all the stuff needed to write programs in Java

**7Zip**A utility to extract files from ZIP files  
Because the utility built into Windows doesn’t always work!

**Eclipse / Android Development Tools / Android SDK**This is an IDE that can be used for lots of things  
Lots of different languages – writing programs for lots of different types of computer – like a general purpose workbench

Stuff to link Eclipse to the Android SDK  
And make it easier to use the Android SDK in Eclipse

The tools that extend the basic Java language to do all the things that Android devices understand

**Android SDK Manager / Packages**Because there are so many versions of Android and different types of devices it runs on, this is just a way of managing and only downloading the bits you actually need

**Android Virtual Device**  
A software version of a physical device  
So that the App runs on an Emulator on your PC screen  
Rather than on a separate physical device

1. **Your First App**

Follow the **links** on the **Coding is Fun** web site to the **Android Tutorials** to build your **First App**  
Follow the instructions step by step

**WOW!!! . . . Problems / Questions? . . . Come and ASK!**