COMP4336/9336 Laboratory General Instructions

This document includes the general information for the lab exercises of COMP4336/9336. The labs will use Android devices. You are welcome to bring your own Android device to the lab and use it for all lab tasks. If you do not have access to an Android device, you can borrow one of the Samsung Galaxy S3 devices from the central pool, which you must return at the end of each lab session.

1- Pre-requisites

For the lab exercises of COMP4336/9336, students will develop programs running for Samsung Galaxy S3 smart phone using Java programing language via ADT plugin in eclipse IDE. While prior expertise in programming with ADT is not required for successful completion of these labs, you are assumed to be familiar with Java and have the ability to obtain and learn necessary materials by yourself.

2- Assessment

The lab exercises weigh 10% of your final mark of this course. You will get a maximum of one mark for each of the 10 labs. Your final lab mark will be the sum of all the marks you get in each lab.
Each lab has several tasks. You need to show the lab instructor the tasks you have done and the mark will be given based on how many/well these tasks are completed.
During your lab hours (2 hours for each lab for a total of 20 hours all together in 10 weeks), you can do any of the 10 lab exercises according to your pace. For example, the tasks of Lab 1 will be fairly easy for most students. For example, you can start working on Lab 2 if you finish Lab 1 in less than 2 hours. Similarly, if you cannot finish Lab 2 in the second lab session, you can keep working on it in the following weeks. However, you must complete all labs in 10 weeks. The instruction for each lab will be posted in the week prior to each lab week (except first instruction).

It is HIGHLY RECOMMENDED that you read the lab instructions and do some homework before attending each lab. You can download ADT to your own computer and try out the lab tasks before attending the lab session.

3- Preparation (You are supposed to finish these works before first lab)

The Android programing is based on Java. If you are beginner in Java get a Java programming book and have a quick reading on the first 2 or 3 chapters to understand some fundamental concepts of Java.

In this series of labs exercises, in order to write an android program for mobile phones, we use Android Development Tools (ADT) which is a plugin for the "Eclipse" IDE that is designed to give you a powerful, integrated environment in which to build Android applications. Actually, ADT extends the capabilities of Eclipse to let you quickly set up new Android applications. You have to get familiar with this plug in and also Eclipse IDE. You can find some useful information in this links:
This link gives you some brief information about Java programing.

http://mobile.tutsplus.com/tutorials/android/java-tutorial/

Here is a useful video about how you can create and run an Android project via eclipse IDE.

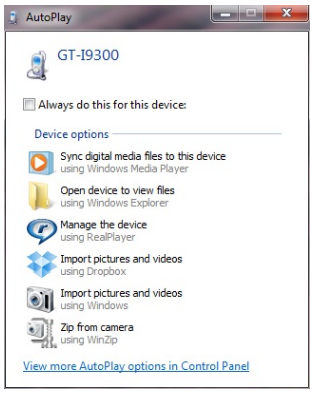
http://www.youtube.com/watch?v=LqVlLh098wY

4- Borrowing & Returning Smart phones

- Before starting each lab, get a Samsung Galaxy SIII smart phone from the lab instructor.
- The smart phone is in a box with, battery, USB cable, charger and other accessories.
- Before leaving, turn off the phone, put all the contents back to the box and return it to the lab instructor.
- The box will be checked by the lab instructor when you returning it. You are responsible for the loss or damage of any content in the box.

5- Connecting the smart phone PC to Your Computer

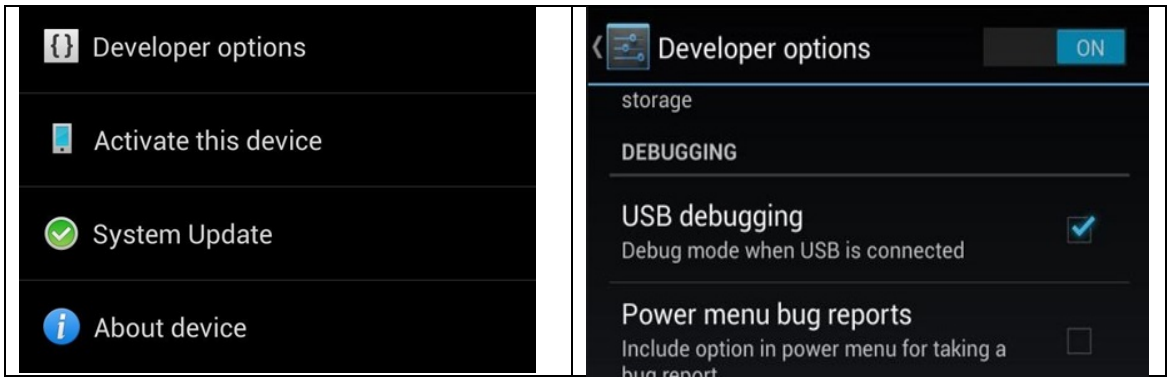
- After booting up, connect the smart phone with PC using the USB cable.
- The following window will pop up in a few seconds indicating that the connection is established.



- By clicking the "Open device to view files" button on the menu bar, you can explore the files in the smart phone. You can also drag/drop files to/from the explorer window to exchange files between the smart phone and your computer.

6- Enable USB Debugging

In order to run Android programs on this smart phone you have to enable USB debugging. For that, in your device, follow these steps: “Settings” -> “Developer options” -> “USB debugging”.



Note: In first run the developer option is not active. You have to active it first. In some version of Android OS, developer options is hidden and to make it visible you have to hit “build number” bottom in “About menu” seven times.

7- Computing Environment in the Lab

- The computers in the lab do not have Internet access.
- The CSE network is accessible. You can read/download lab instructions and access the home directory of your CSE account. If you want to login, or copy files to the CSE server, use the Putty and WinSCP installed on the computer.
- The computers are not password protected. If you leave your files on the computers, it is not guaranteed that they will remain unchanged before you go to the lab next time (they might even be deleted!). Therefore, remember to backup your unfinished work to the CSE server each time before leaving the lab.
- You are not allowed to install other software on the lab computers

8- Using Your Own Computer

You can setup the developing environment on your own computer to:

- Prepare the lab exercises
  You can start coding on your own computer before going to the lab. You can do some preliminary tests without the real device by deploy the program into the emulator. You will learn how to use the emulator in Lab1. However, with emulator, you cannot test the functionalities relating to GPS or WiFi devices.
- Do the lab exercises
  You are allowed to bring your own computer to the lab, but you will not have wired network connectivity.
- Develop programs for your assignment
  The Samsung Galaxy smart phones will be distributed to assignment groups after all the lab exercises being finished.

To setup the environment, the following steps are required:

- Download and install an appropriate version of Java Development Kit (JDK) from: http://www.oracle.com/technetwork/java/javase/downloads/index.html

- Download an appropriate version of ADT from below link and then unzip it to folder. http://developer.android.com/sdk/index.html

- In Windows OS, in the unzip folder go to the "eclipse" folder and run eclipse.exe. In other operating system, you have to run eclipse from this folder.

To develop and run an Android based application you have to follow these steps, will be explained in more details in the first lab instruction (This figure is originally from Android developer site http://developer.android.com/tools/workflow/index.html).