Mini Lab 1 – Getting Started!

Objectives:

1. Learn to use the Android Studio development platform
2. Build your first Android application and run it on your Android phone

Note: **This minilab should be done individually.**

Project Description:

Task 1: **Your first Android application!**

Preparation:

Download Android Studio, following this page:
https://developer.android.com/studio

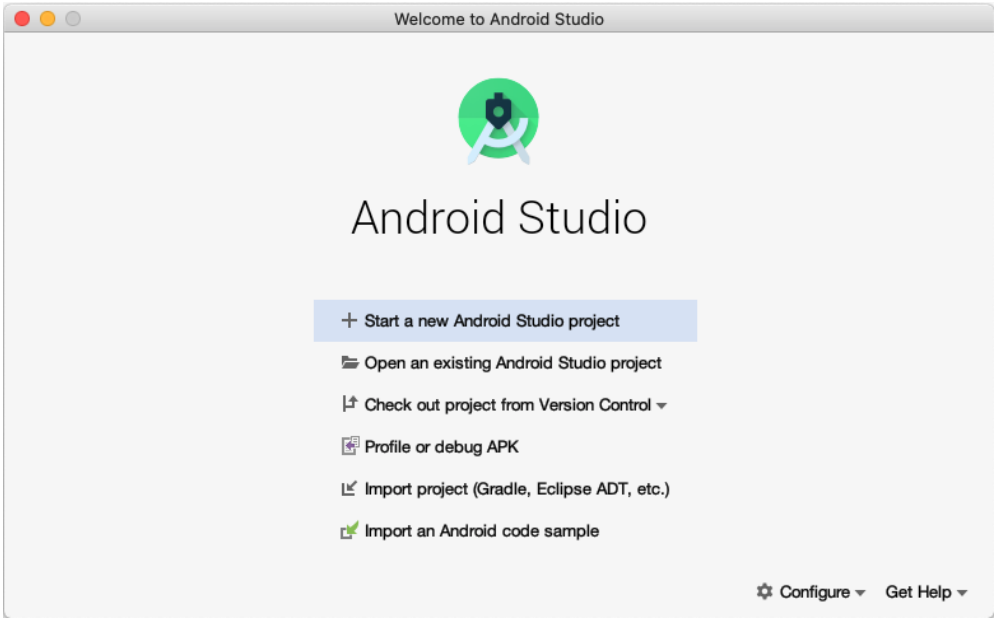
Install Android Studio, following this page:
https://developer.android.com/codelabs/basic-android-kotlin-training-install-android-studio?return=https%3A%2F%2Fdeveloper.android.com%2Fcourses%2Fpathways%2Fandroid-basics-kotlin-two%23codelab-https%3A%2F%2Fdeveloper.android.com%2Fcodelabs%2Fbasic-android-kotlin-training-install-android-studio#4

- Android Studios works on Windows, Linux and Mac. Make sure you allow installation of the "Android SDK" and "Virtual Device" components when asked. You may also be requested to install Java if it is missing.
- Add extra SDK packages following:
  https://developer.android.com/sdk/installing/adding-packages.html
- Make sure you have the "Google USB driver" (only for windows) and "Intel x86 Emulator Accelerator" packages installed. Also, avoid running the Android Studio emulator in a virtual machine which itself is an emulator. Nested emulation can easily fail.
- It may be also necessary to install drivers for your smartphone, e.g., for Galaxy Nexus:
  http://www.samsung.com/us/support/owners/product/GT-I9250TSGGEN
- Enable developer mode on your device. Each device has a different way to do so, it is best to just Google it. We are here to help if you cannot find the answer.
- Now you are ready to program in Android!

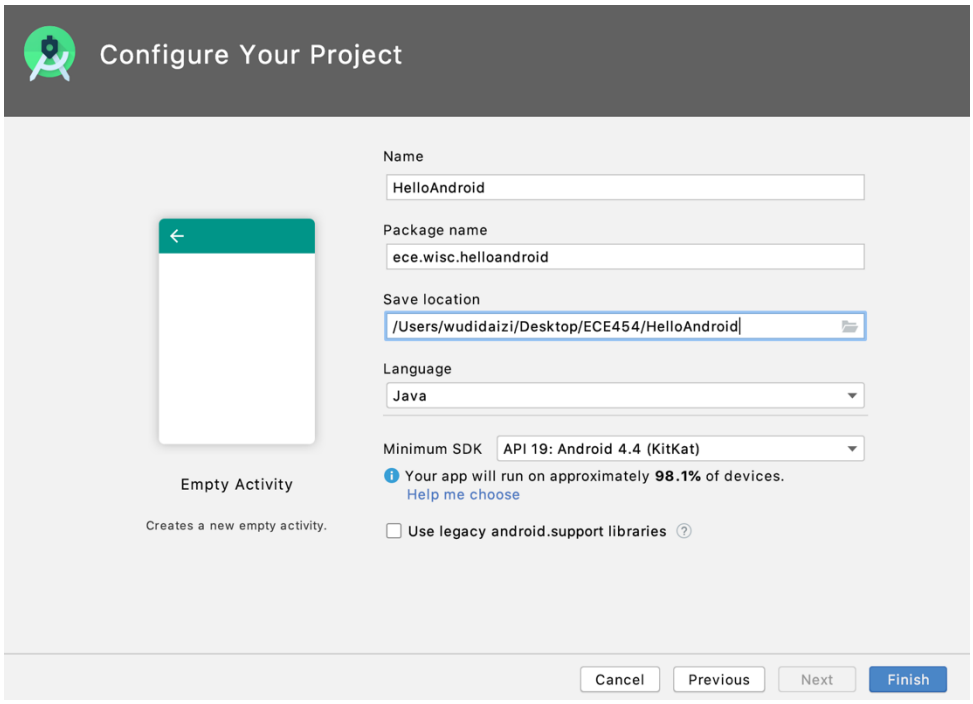
Requirements: Your first Android will display "Hello ECE454!" on your phone screen. Follow the steps below to complete the task.

Step-by-Step Instructions:

1. Run Android Studio. It will start the new project wizard. Click "Start a new Android Studio project" as shown below. (The panel might be different on different platforms. When you have already opened a project, starting a new project can be found in file->new->new project.)



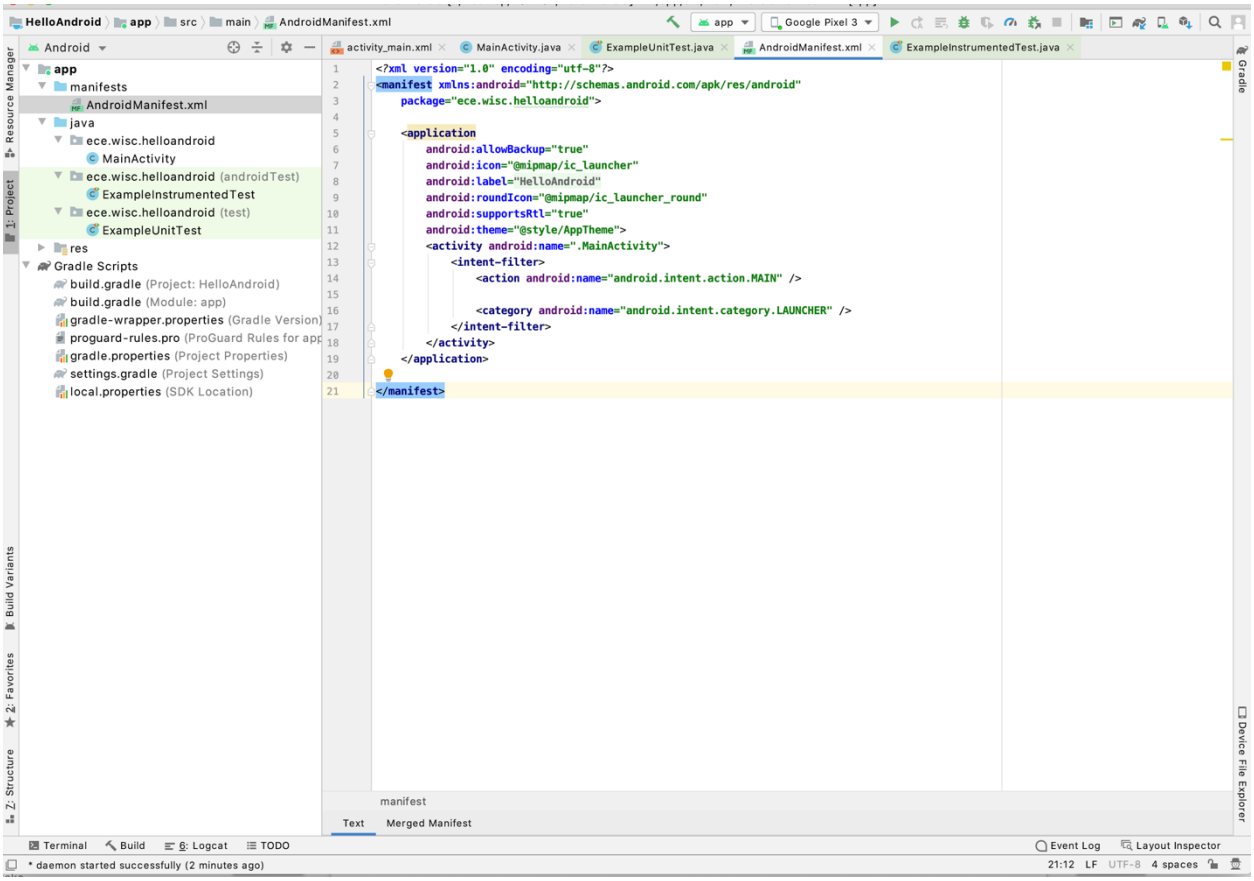
2. On the "Select a Project Template" panel, choose the empty activity for "Phone and Tablet", and click "next". Then in the config page, fill in the project name, package name, and project location as shown below. The package name is the reverse of the company domain (our company domain is: ece.wisc.edu). If you want to customize the package name, click *edit* on the right of *Package name*.



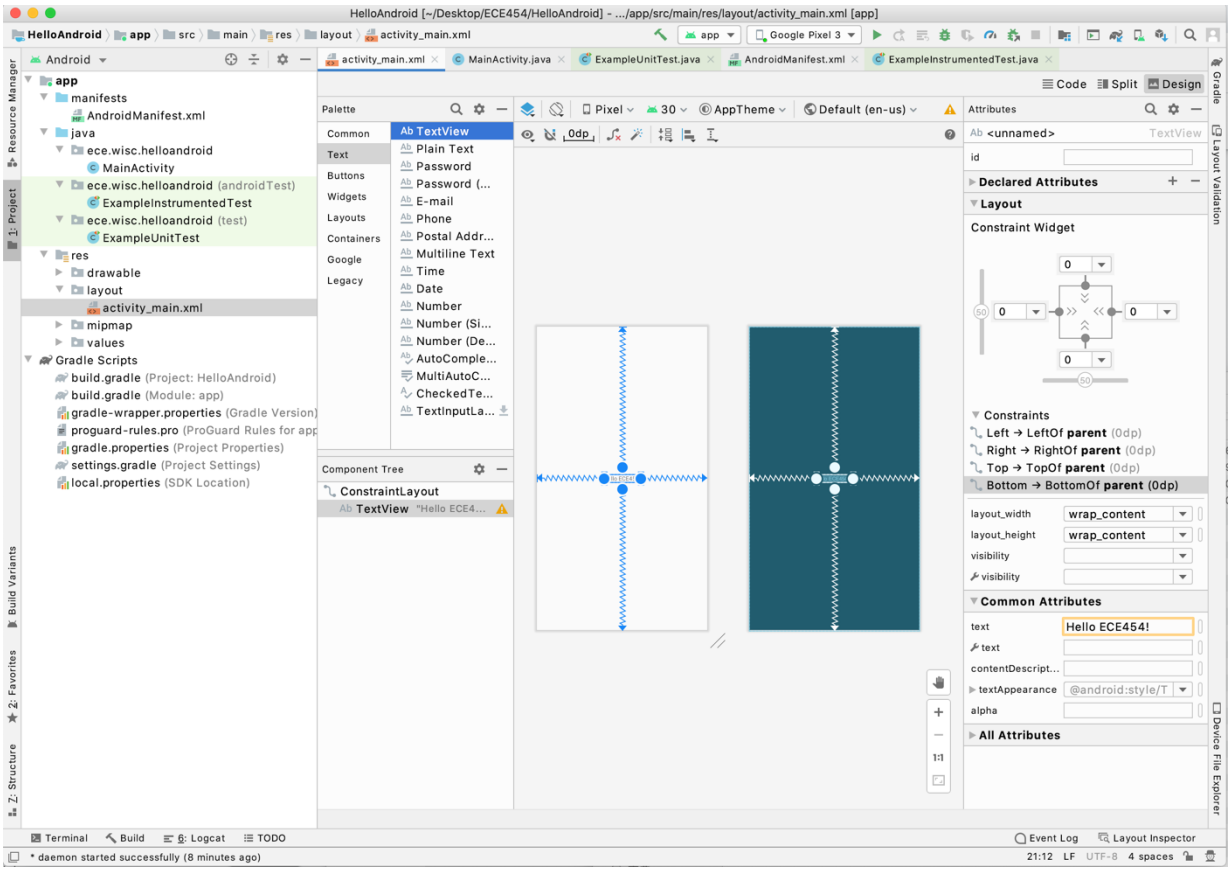
Minimum SDK indicates the minimum version of Android that your app can run on. Select API 19: Android 4.4 (KitKat)from the dropdown list.
Also, make sure **Use legacy android.support libraries** is unchecked.

The project location is where your project files reside. Choose any location you want. Click *Finish* when you are done.

3. Then you reach the project page, with left indicating the file hierarchy of the project, and right indicating the codes of opening files. On the left bottom, you can proceed to the next step when you see info like “started successfully”. Do NOT proceed when something is still proceeding.



4. Open the app/src/main/java folder and look at the MainActivity.java code. This is the HelloAndroid code that controls what shows up when the app is launched. By default, this app shows “Hello World” when launched. You will need to change the text to “Hello ECE454!”. To do so, first look at the MainActivity's layout file at `app/src/main/res/layout/activity_main.xml`. Also, you can do it as in the diagram below in the yellow block.



5. Run the application on the Android emulator. Click the **run** button in Android Studio. In **Choose Device** dialog, check **Launch emulator** and click **OK**. A device window will pop up. Android Studio will install the app (the HelloWorld.apk) on your emulator (called Android Virtual Device, AVD) and starts it. This could take some time (including downloading images, and config the AVD to a specific model, https://developer.android.com/codelabs/basic-android-kotlin-training-first-template-project?return=https%3A%2F%2Fdeveloper.android.com%2Fcourses%2Fpathways%2Fandroid-basics-kotlin-two%23codelab-https%3A%2F%2Fdeveloper.android.com%2Fcodelabs%2Fbasic-android-kotlin-training-first-template-project#2).
   Alternatively, you can connect an Android phone to the PC host via a USB cable, and run it directly. Specifically, click the **run** button in Android Studio, choose the device name (e.g., Galaxy Nexus) and click **OK**. It is much faster to run it directly on the phone than on the emulator.
   We will provide a few phones for test purpose. Please return the phones to the TA after you are done with the testing. The phones will be loaned to you starting from minilab2.
6. Inside Android Studio select **File > Export to zip file** and save the file as **lab-1-submission-**<*last_name*>**.zip**. Upload the file to canvas.

Task 2: **Background survey.** Please answer the background survey on Canvas page.

Deliverables:

1. Deadline: Wednesday, 09/02/2015, in lab.
2. Run your first app on the Android emulator (or on an Android phone, or both) and demonstrate it to the TA.
3. Submit your answers to the background survey to Canvas.

Grading:

Task1: 1.5/2 (you will get full grade if your app is functioning)
Task2: 0.5/2 (you will get full grade if you answer all questions)