CSE 437 Lab Assignment 1: Getting Started with Android Studio

Introduction

The main goal of this lab is to get familiar with Android Studio and learn the fundamentals of developing Android applications.
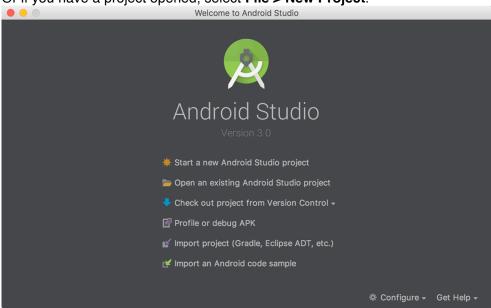
Before you start this class, download and install Android Studio.

Instructions:

This lab shows you how to create a new Android project with Android Studio and helps you understand some of the basic concepts of Android App development.

1. In the **Welcome to Android Studio** window, click **Start a new Android Studio project**.

    Or if you have a project opened, select **File > New Project**.

2. In the **Create New Project** window, enter the following values:

    o   **Application Name**: "Lab1"

    o   **Company Domain**: "cse437.com"

    You might want to change the project location.

3. Click **Next**.

4. In the **Target Android Devices** screen, keep the default values and click **Next**.

5. In the **Add an Activity to Mobile** screen, select **Empty Activity** and click **Next**.
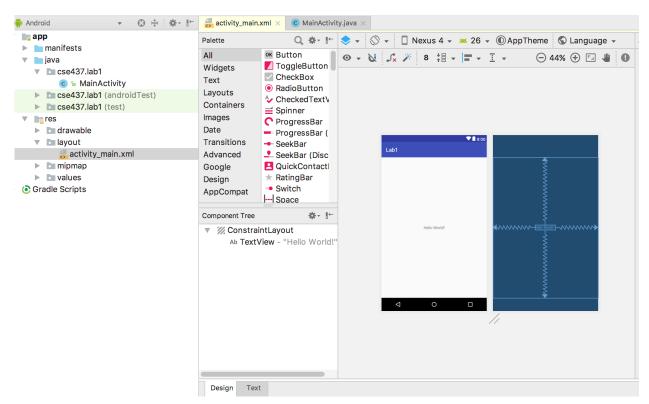
6. In the **Configure Activity** screen, keep the default values and click **Finish**.

After some processing, Android Studio opens the IDE.
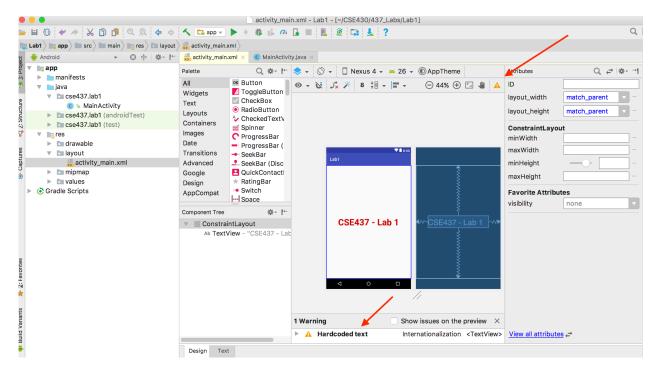

7. You can see the layout of the *MainActivity* by navigating to the <activity_main.xml> under app/res/layout. Note that you must select the "design" tab to see the layout.
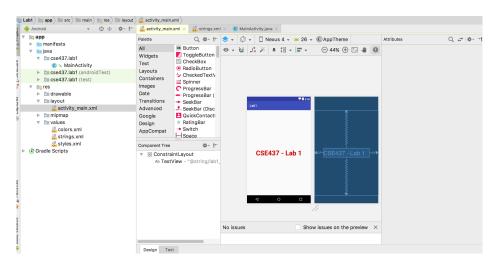

8. The current layout has only one *TextView* with the default text: "Hello World". Let's now make some changes.

Task 1: Change the "Hello World" font size to 40sp and make the style "Bold"

Task 2: Change the text color to "Holo_Red_Dark"

Task 3: Change the text to "CSE 437 – Lab 1"

Task 4: Check top right corner of the design screen. Do you see a warning?
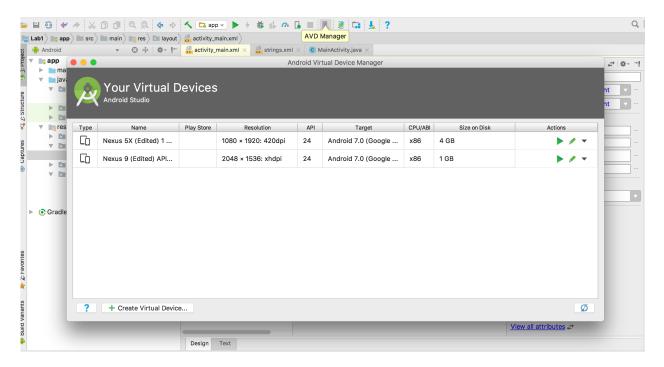

Note that changing the text field through hardcoding is not a good practice.

Task 5: If you have this warning, try to find a way to fix it. Search for the best practices in assigning text to the text field. After completing this task, you should have the following design view.

9. Let's now run the application on the emulator. First, we need to make sure that we have a virtual device.
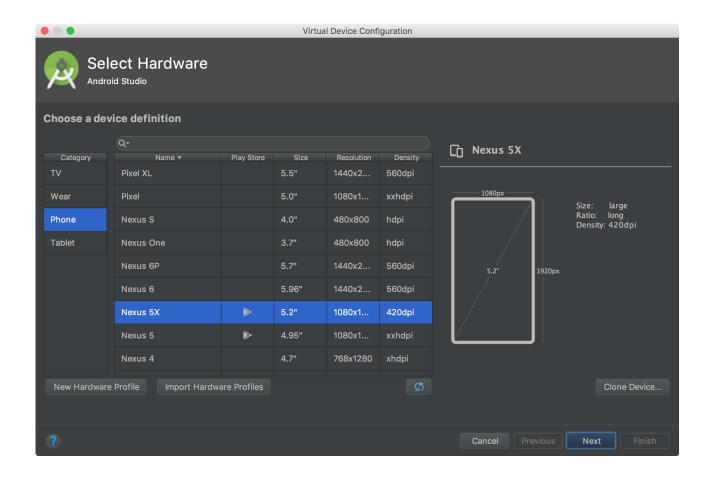

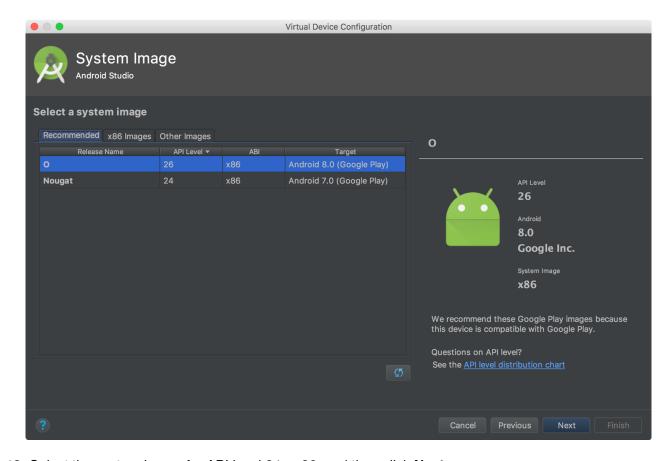10. Open the AVD Manager by clicking **Tools > Android > AVD Manager**.

11. Click **Create Virtual Device**, at the bottom of the AVD Manager dialog.

    The **Select Hardware** page appears.

Virtual Device Configuration

Select Hardware
Android Studio

Choose a device definition

Category	Name ▼	Play Store	Size	Resolution	Density
TV	Pixel XL		5.5"	1440x2...	560dpi
Wear	Pixel		5.0"	1080x1...	xxhdpi
Phone	Nexus S		4.0"	480x800	hdpi
Tablet	Nexus One		3.7"	480x800	hdpi
	Nexus 6P		5.7"	1440x2...	560dpi
	Nexus 6		5.96"	1440x2...	560dpi
	Nexus 5X	▶	5.2"	1080x1...	420dpi
	Nexus 5	▶	4.95"	1080x1...	xxhdpi
	Nexus 4		4.7"	768x1280	xhdpi

Nexus 5X

1080px

Size: large
Ratio: long
Density: 420dpi

5.2"   1920px

New Hardware Profile   Import Hardware Profiles   Clone Device...

Cancel   Previous   Next   Finish

12. Select a hardware profile, and then click **Next**.

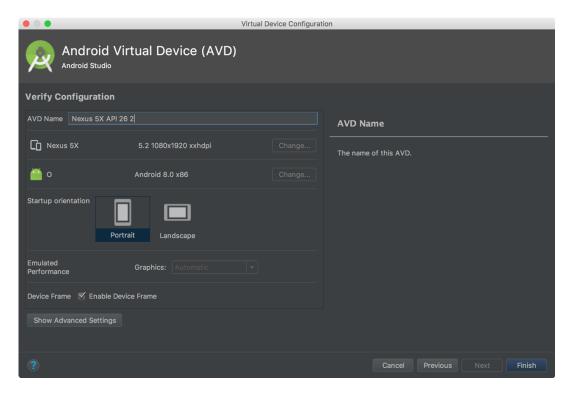The **System Image** page appears.

13. Select the system image for API level 24 or 26, and then click **Next**.

   The **Recommended** tab lists recommended system images. The other tabs include a more complete list. The right pane describes the selected system image. x86 images run the fastest in the emulator.

   If you see **Download** next to the system image, you need to click it to download the system image. You must be connected to the internet to download it.

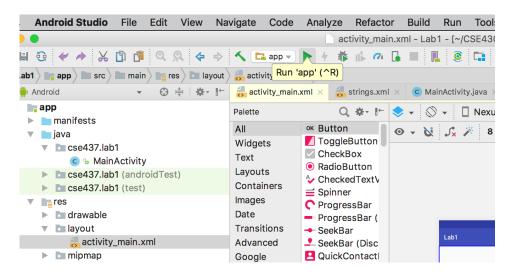   The **Verify Configuration** page appears.

14. Change AVD properties as needed, and then click **Finish**.

    Click **Show Advanced Settings** to show more settings, such as the skin.

    The new AVD appears in the **Your Virtual Devices** page or the **Select Deployment Target** dialog.

15. Return back to your Android Studio project. Run your App and take a screenshot of application while it's running on the virtual device.

The application should look like this.

Let's now run our App on a real device.

16. Connect your device to your development machine with a USB cable. If you're developing on Windows, you might need to install the appropriate USB driver for your device.

17. Enable **USB debugging** in the **Developer options** as follows.
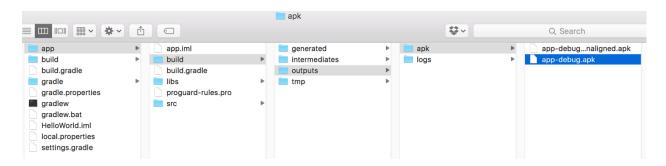
First, you must enable the developer options:
- o   Open the **Settings** app.

- o   (Only on Android 8.0 or higher) Select **System**.

- o   Scroll to the bottom and select **About phone**.

- o   Scroll to the bottom and tap **Build number** 7 times.

- o   Return to the previous screen to find **Developer options** near the bottom.

Open **Developer options**, and then scroll down to find and enable **USB debugging**.

Check with your lab instructor if you have any issues in this step.

Submission Instructions

1. Open a "Windows Explorer" window (Finder on Mac) and navigate to the project source code location

2. Copy the app-debug.apk file to your desktop. Rename the file to <lastname_firstname_lab01.apk> and send it to **pete.ragheb@gmail.com** **with the subject line: CSE437_Lab1**

3. Print a hard copy of the activity_main.xml file. Write your name and class number on the paper and submit it to the lab instructor.

4. Demonstrate your app on a real device and show it to the lab instructor during the lab time for marking and feedback.

5. Keep a copy of the project workspace for your record. The lab instructor might ask you to submit it during the marking process.