

Mobile Application Security Assessment
Lab 1: Mobile app Development and Mobile Emulators

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Objective

In this lab experiment the students will practice fundamental items to be able to complete this course and do the next labs and projects. The students will get familiar with mobile emulators and develop an Android app.

Requirements

Android Studio, VMware, multiple Android Emulators

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Instruction

1. Part 1: Investigate Mobile Emulators

Install following Android Emulators in virtual environment on your own machine (separately) and compare them. Create a separate virtual machine for each emulator.

1. Genymotion (<https://www.genymotion.com>)¹
2. Android x86 (<https://www.android-x86.org>)
3. Any free Android or iOS emulator other than above emulators and Android Studio Emulator. This is a research opportunity for students to discover any new and useful Android or Apple iOS emulator and analyze their possible advantages over other emulators. This part is not mandatory.

Ensure that your devices are connected to the internet, and you can ping them from the host machine. For the emulator you can either demonstrate ping from your own machine or from another machine.

For app store (Google Play Store) create a new account with the following naming convention:

- <student's first name>.CYT230-<Semester> (for example alex.cyt230-Fall2022)

For your submission explain your implementation and installation steps in details, take screenshots of each emulator and ping results and compare them and explain your preferred

¹ <https://support.genymotion.com/hc/en-us/articles/360002720057-Can-Genymotion-Desktop-run-in-a-virtual-machine->

emulator. The screenshots must have your name and date in the machines (e.g., wallpaper, background or machine name or command prompt, etc.)

Once Part 1 of the lab is completed successfully, create, and store a clean clone of your emulators to ensure that you will be able to use them in future labs and projects.

2. Part 2: Build and run an Android app

Follow this instruction to build and run an Android app. Use the above naming convention for the project name and the app name.

2.1. Step 1: Create your first Android app

Complete instruction is available under this URL:

<https://developer.android.com/training/basics/firstapp/index.html>

2.2. Step 2: Develop UI for Android

Complete instruction is available under this URL:

<https://developer.android.com/develop/ui>

Note: Instead of the phrase “Hello World” you can use your name (e.g., “Hello Alex”)

3. Part 3: App Manifest

Every app project must have an **AndroidManifest.xml** file (with precisely that name) at the root of the project source set. The manifest file describes essential information about your app to the Android build tools, the Android operating system, and Google Play.

For this part of the lab, learn about app manifest² and then go back to your emulators in Part 1 of the current lab and see if you can find any app manifest on your emulators. Then go back to your project in Part 2 of the current lab and see if you can find app manifest. For your submission explain how you were able to find the app manifests and take screenshots of the app manifests’ first page view. The screenshots do not need to contain the entire app manifest files.

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² <https://developer.android.com/guide/topics/manifest/manifest-intro>