

# CS 577 Cybersecurity Lab

## Lab 7 – due 11/12/15 11:59pm

### Subject: Android Application Security

The aim of this lab is to familiarize yourself with the Android OS and its applications. You will build a simple application and then modify it, similarly to how malware authors obtain and modify legitimate applications in order to inject malicious code.

### ***Deliverables***

Perform the following and deliver 3 Android applications (80 pts):

**1. Build an app, package it in an APK, and execute it (20 pts)**

Create an Android application. This application can be a simple “Hello world” program for Android. You can use Android studio, Eclipse, or the command line if you are adventurous, to create and run your application on your laptop. Package the app into an APK. Submit both your source code and the APK.

**2. De-compile your application, modify it, and repackage it (30 pts)**

Use one of the available tools to de-compile your APK. Following, modify the extracted code. **Add** some code to the application and recompile it. Also, install the application into the emulator and execute it. Submit the modified de-compiled code, as well as the new APK. Note that you cannot directly modify the source code you wrote in the 1<sup>st</sup> deliverable.

**3. Download and try to modify a larger application (30 pts)**

Download an APK from <https://f-droid.org/>. Use the same tools you used for the 2<sup>nd</sup> deliverable to de-compile the application, try to modify its code and recompile it into a new APK. Report any challenges you face doing this. If you are able to modify it, install it into the emulator and execute it. Can you also change the permissions required by the application, (e.g., by adding new permissions)? Submit your findings, including modified source code and APKs.

Include a report.txt file explaining the various steps you took for the above deliverables (20 pts).

### ***Useful Information***

#### **Tools**

Apktool: <https://code.google.com/p/android-apktool/>

Smali debugging: <https://code.google.com/p/androidapktool/wiki/SmaliDebugging>

dex2jar: <https://code.google.com/p/dex2jar/>

JD Decompiler: <http://jd.benow.ca/>

jarsigner or keytool:

[https://www.owasp.org/index.php/Signing\\_jar\\_files\\_with\\_jarsigner](https://www.owasp.org/index.php/Signing_jar_files_with_jarsigner)

### **Android security information**

Android Security Overview: <https://source.android.com/devices/tech/security/>

System Permissions:

<http://developer.android.com/guide/topics/security/permissions.html>

### ***Submission information***

The code you submit for grading must run on the latest Android emulator. You can use your laptop to demonstrate this. Submit all your files as a tar.gz archive through Canvas.