CS 5863/7863: TELECOMMUNICATION NETWORKS

PROJECT ASSIGNMENT:
ANDROID NETWORK SURVEY AND SMS

OVERVIEW

This project was designed to tie together course concepts with the real-world environment of a modern mobile operating system. High level APIs expose interfaces that allow monitoring network conditions, sending messages, placing calls, and more.

ASSIGNMENT

Using the Android SDK, you will develop an application that can gather and present information about the cellular network and the device. This includes identifying information like the LAC and MCC of the current serving cell, as well as the IMSI and IMEI of your phone. Information regarding your data connection (e.g. IP addresses), if any, is also available. You will quickly learn what network information is available to the developer after spending some time looking at the API. Pick a handful of the identifiers/information that we've learned about in class and display them to the end-user in your application.

Additionally, your application will need to provide a basic SMS service that will allow you to send a message to a phone number entered by the user. This message could contain some survey information about the phone or just some test case to demonstrate you can send an SMS. You may want to run two instances of the Android emulator to send test SMS messages between phones.

Be creative in displaying your program's output. Take this opportunity to learn a bit about what you can do with the Android SDK.

METHODOLOGY

I recommend installing Android Studio and following the walk-through at developer.android.com to set up your environment. You will be using an Android phone emulator to test out your application. You're free to use real phones if you'd like, but this is not a requirement.
A few quick Bings will lead you to some potentially helpful classes in the Android API documentation. Particularly, familiarize yourself with the Telephony provider and its subclasses like SmsManager and CellIdentityGsm.
Sending and receiving SMS messages requires a bit of overhead, including registering as the default SMS app (selected by the user in the settings menu), and handling a particular set of intents. This will require more background reading than the basic network survey function.
The network/device survey portion is more straightforward, and I would recommend finishing it ASAP so you can spend more time on the SMS portion. I don't expect any of you to become Android experts in a month, but don't underestimate the time investment required to familiarize yourselves with the SDK and building basic layout/UI elements.

GRADING

This assignment is due by 11:59PM CST on May 6th, 2025. Submit all source files, relevant screen shots of your app working, as well as a compiled APK.
Grading will be based on how informative your application is in terms of displaying the network/device survey results, and the success or failure of your SMS sending function. I will be installing/running each application on an Android emulator (provided by Android Studio). Additionally, I'll be reviewing your code to gauge the level of effort and understanding.