CSC 122: GPS Scavenger Hunt

Comprehensive Final Lab

1 Introduction

In this lab you will create a scavenger hunt application using the Near Field Communication (NFC) and GPS sensors in your phone. You will create the application on your own, using existing Google tutorials. This application will reinforce every topic you have learned in CSC 120 and 122.

2 Objective

The objective of this lab is to use your knowledge learned in CSC 120 and 122 to create complex scavenger hunt application from scratch. You will further your programming knowledge by using NFC and GPS classes and interfaces. This lab will test your what you have learned thus far.

3 Activity

This section will give you information on the actual work necessary to complete the lab. The Background Information section will provide suplementary information and the Implementation section will provide guidelines for completing the lab.

3.1 Implementation

This section will guide you through the implementation of the solution.

3.1.1 Research

You will need to look through the Google NFC Demo application at http://developer.android.com/resources /samples/NFCDemo/index.html. You will also need to look through the Google Maps View tutorial at http://developer.android.com/resources/ tutorials/views/hello-mapview.html.Make sure to read through these tutorials very carefully; they will greatly aid you when writing this application. You will be using these two tutorial applications to create your scavenger hunt application. You should also read through the Android NFC guide found at http://developer.android.com/guide/topics/nfc/nfc.html. This guide will help you understand more about using NFC classes in an Android application.

3.1.2 External Libraries

For this application you will need to download an external library. This library is called the ”Google Guava” library. It can be found at http://code.google.com/p/guava-libraries/. Just download the latest version of the Jar from this website (at the time of this document the latest version was 12.0). In eclipse go to Project-¿ Properties -¿ Java Build Path -¿ Libraries Tab. In this window, click ”Add External JARs” and find the ”Google Guava” Jar you just downloaded.

3.1.3 Explore

This application is going to work by scanning an NFC tag programmed with plain text that hold the latitude and longitude of the next NFC tag. In order to catch the NFC tag, you must create an `intent-filter` in the `AndroidManifest.xml` file. More information about how to filter intents can be found at the Android NFC guide linked above. The data from the NFC tag will be pulled as a String. You will need to take this string and parse the latitude and longitude data, which is semicolon delimited (i.e. 31.7563;89.38383). The application will then take the latitude and longitude and pass them to the GPS activity, which will display the coordinates as a `Overlay` item on a `MapView`.

4 Conclusion

Using all of your knowledge of programming, you should have now successfully programmed a complex scavenger hunt application. You will be able to test your application with the NFC tags that are hidden around campus.

5 Deliverables

To submit your application, export your Eclipse project as a file system, zip all of the files into an archive and submit them online with the filename `<first_name_initial><last_name>-lab<lab#>.zip`.