Comp 4985 Computer Systems Technology February 2015

Data Communication and Internetworking Option

Assignment #3

Due Date: March 12, 0930 hrs. This is a team project.

Objective: To gain experience with Android application development.

Assignment:

You are required to design and implement an Android application that allows a smartphone (Android or IOS) to communicate with a remote server using the TCP/IP protocol suite. In addition you are required to implement location finding functionality into the client application. The server application will be running on a Linux machine with the Apache web server running. The client device will send the server its current coordinates, which the server application will format and store in a file using a format (e.g., XML) suitable for viewing using a web browser.

Your overall application must implement the following **minimum** features:

a. The client will acquire its current location (using any of the techniques we have discussed in lectures) and send the coordinates to a receiving server using either Wifi or (optionally) provider wireless data services. This will be a custom app using TCP or UDP connections to the server application using user-specified ports.

b. The client app will prompt the user for an IP address together with a port number for the remote receiver.

c. Once the app has the remote address information, it will beging to collect location information and send it to the server with periodic updates.

d. The server device will receive the location data and format the data in a file which will be able display the following information:

- The time the coordinates were received
- The IP address and name of the client device
- The latitude and longitude of the sending device

e. The server application will then read the file and plot the coordinates of the client device on a map using the Google maps API and generate a file in the default Apache home directory, which can then be viewed remotely using a web browser.

f. You must ensure the default web page on the server uses password authentication for access.

g. The server application will have the functionality to receive continuous updates from multiple client devices and generate update files as described above.

Constraints:

- You must implement the communication channel(s) between the two client device and the server using the TCP/IP protocol suite.
- There are no other technical constraints on the tools, utilities, and languages you use to design and implement this application, other than it must be done on Android or IOS.

To be submitted:

- Detailed design work showing all the implementation details of the program.
- All the components of your application (including a pre-compiled package) in separate directory. Make sure your provide a **manifest file** that details all of disk contents.
- A clear and concise **README** outlining all the different modules and components that you have submitted and how to build a functional package using them.
- A clear and concise user document on how to use your application.
- A detailed test document demonstrating the functionality of the application as per specifications.
- In addition you will be required to demonstrate the working of your program in the **SE 12-323 lab** on the day the assignment is due.

Evaluation

(1). **Design Work**:	/ 10
(2). **Code Quality**:	/ 5
(3). **Functionality**:	/ 60
(4). **Testing**:	/ 20
(5). **README/Manifest:**	/ 5
Total:	/ 100