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Data Communications (Comp 4985)

Android GPS

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# Requirements

* Android application that allows a smartphone to access a server via TCP/IP
* Must implement the channels between two client devices and the server using TCP/IP
* No constraint on languages or tools
* Must be completed on android and/or iOS

## Client Application

* Client acquires its current location
* Client sends the co-ordinates to a receiving server over Wi-Fi using TCP or UDP connections to the server
* Client app prompts the user for an IP address and port number of the server
* After entering the address information of server, app collects location info and sends it to the server periodically

## Server Application

* Runs on Linux machine with apache web server running
* Receives the location data and formats the data in a file
* Data should include:
  + The time the co-ords were received
  + IP address and name of the client device
  + Latitude of device
  + Longitude of device
* Generates a file in the default apache home directory for the web page
* Can receive updates from multiple client devices and generate update files accordingly

## Server Web Page

* Server will read the file and plot the co-ords of the clients on a map using google maps API
* Can be viewed remotely using web browser
* *Must* have password authentication for access

# State Flow Diagrams

## Server Application



## Client Application



## Server Website



# Pseudocode

## Server Website

### Home Page

ready home function

{

when the document is full loaded

call the load data function

}

load data function

{

clear all the data from the table

set up an http request for the data file

fetch the data file

for each user in the XML

parse the latitude

parse the longitude

parse the name

parse the time

parse the IP

call the add to table function

set a timer to call the load data function every 5 seconds

}

add to table function

{

append the name, ip, time, latitude, and longitude

to the table via html elements

}

### Map Page

ready map function

{

when the document is full loaded

call the initialize function

call the load data function

}

initialize function

{

create the stylized map via JSON objects

setup the map options

create the google map object

set the style on the map

fetch the geolocation of the user running the website

if their browser does not allow geolocation

display errror

else center the map to their location

}

load data function

{

clear all the markers from the map

set up an http request for the data file

fetch the data file

for each user in the XML

parse the latitude

parse the longitude

parse the name

parse the time

parse the IP

call the add marker function

set a timer to call the load data function every 5 seconds

}

add marker function

{

create the latitude-longitude object based off parameters

make a marker object with the specified position and name

add the marker to the array of markers

}