Chalk's Estate Agents Web and Mobile Application – a summary

ASSIGNMENT

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1. Introduction

The purpose of the system described in the following report is to facilitate the transfer of information between a fictional estate agent company and their potential customers. The system is split into two sections: a web based application that allows the estate agent to upload property information (including its location) to an SQL database; and a mobile based application that allows the potential customers to read information regarding properties that the estate agent sells. Furthermore, as the locational information of the properties for sale or rent are stored as a geometric 'point' on earth's surface, this allows the distance of the mobile device to be calculated to each of the properties. This means that if a potential user is passing a property that is for sale, they can open up the app, and using the smartphone's locational information, view information regarding the property in front of them and even book an appoint to view the property on the app without having to search for it.

2. Application aims and objectives

Aims:

- Produce an effective, easy to use, error tolerant and efficient system that allows mobile users to view properties for sale by a fictional estate agent.

Objectives:

- Create a functional web application that allows employees of an estate agent to quickly and easily upload property information.
- Create a functional mobile application that allows a user to easily view properties that an estate agent offers; quickly view information regarding a property that the user has just seen in real life; and allow the user to request an appointment to view a property at the estate agent.
- Design a method of transferring information from the web application to the mobile application quickly and effectively.

Web application

For the web application, four files were produced and uploaded to the UCL server using the coding language PHP. This language allows calculations to be made by the server automatically every time that the files are requested. Table 1 displays the files that were created and their function.

PHP Files	Function
index.php	Used as the home page for the estate agent data input system. The page was split into two sections: one a google map that allowed the latitude and longitude of a location to be selected visually; and a form that recorded data regarding the property that was bring uploaded such as price and address.

processCoords.php	Used to connect to the SQL database table held on the UCL server and insert the data recorded in index.php to the database. A basic error handler alerts the user if the data is successfully or unsuccessfully saved to the database.
processRequests.php	Also used to connect to an SQL database table held on a server. However, this page was designed to receive information submitted from the mobile application regarding a user wishing to book an appointment to view a property. An error handler alerts the user if the data was successfully saved onto the database that the estate agent will be in touch to arrange the appointment.
createGeoJSON.php	The final php page is used to connect to the same database table as 'processCoords.php' and display the information held in the table as a GeoJSON string. This can be downloaded by a mobile device to populate a map, for instance.

Table 1 - Table listing the php files that make up the web-based part of the system reviewed in this report.

3. Mobile Application

For the mobile application, five coding classes were written which described three activities to the user, visualised in figure 1. When the application is first launched, a Google map fragment is displayed with markers overlaid denoting the properties that the estate agent offer at their respective locations. A listener is started which means that if the user taps on one of the markers, a pop-up is displayed listing all the relevant information regarding that property such as sale price and address.
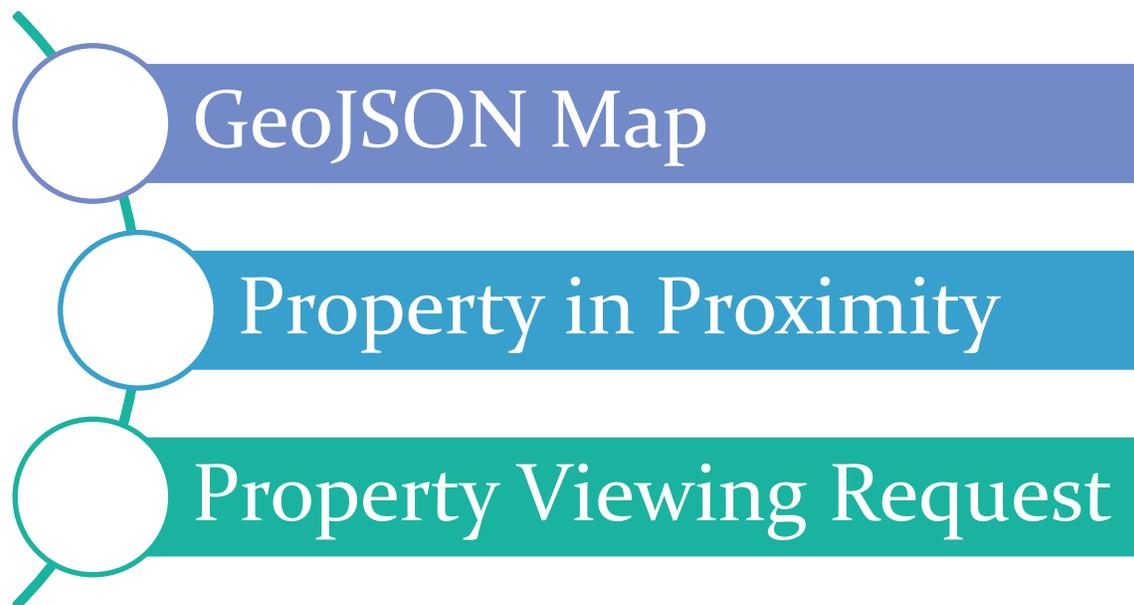

Figure 1 - Diagram visualising the java activities that make up the mobile-based section of the system reviewed in this report.

However, one of the objectives of this application was to produce an app that allows a user that has walked past a property being sold by the fictitious estate agents and would be interested to find out more information regarding the property to do so quickly and easily. Therefore, should this be the case, the user need only click on the button at the top of the screen that states "I am looking at a property I like" and an intent takes the user to the following activity stated in figure 1 as 'Property in Proximity'.

Property in proximity uses two java classes: CustomLocationListener and GPSSensorActivity. The result of the coding (see appendix for further details) allows the JSON downloaded in the first activity to calculate the distance between the user and each property. An IF statement means that if a property is located within 10 metres of the user, its iteration is recorded and held as a variable. This variable is used to display the relevant information for the property in the vicinity of the user on this activity. If a property is displayed, a button is displayed at the bottom of the screen allowing in the user to pass into the final activity: 'Property Viewing Request'.

'Property Viewing Request' carries the information as to which property is in the vicinity of the user and stores it in another variable value. The final activity shows a form, an empty space and then two buttons at the bottom of the screen. The user is able to fill out of the form, the property ID is automatically filled in for the user using the information carried over from the previous activity (to enhance data quality) and then the data is sent using a POST method to the php file '*processRequests.php*' held on the UCL server. This page saves the data on a database designed to hold such data and returns a string to the empty space of the mobile device screen. This string alerts the user as to whether the data was safely saved onto the database and the request has been successfully made or whether there was an error and they should contact the estate agent directly.

4. Application Testing

Testing of the web-based application and the mobile-based application were crucial to their development. Each were rigorously tested by analysing how the system reacted when a wide variety of data was entered. Various steps were taken to homogenise the systems response such as modifying the data entry page '*index.php*' in order to ensure that the grammar, capital letter usage etc of the 'For Sale' or 'For Rent' to only permit data entry through a drop-down box. This allowed code to be written in the mobile application to adjust the terminology of the mobile application so that the application would say 'Monthly rent' if the property is to rent, or 'list price' is the property is for sale.

5. Future improvements

There are a number of potential improvements which could be made to the system. The first would be more information regarding not just the property for sale, but the surrounding areas also.

- A user might wish to be able to see where the local schools are in the area, or the tube or bus links or possibly crime data. This would be a useful source of data for a person looking to buy a new house.

- Future iterations of this system could use a fully automated property viewing booking system. Whereby an SQL table is automatically generated that holds the hours of the days and the days of the year when a new property is uploaded to the system. Then, when a viewing is organised, it is saved on this database and therefore when a user wishes to book a viewing, they can see when the property is occupied and when it is not.
- Moreover, a system that sends an email confirmation to the user when they have requested an appointment to view a property would offer a greater level of feedback to the user from the system. This could be considered for future developments.

6. Appendix

Chalks Estate Agents folder listings

- assignment
  - java
    - …
      - CustomLocationListener.java
      - GeoPoint.java
      - GPSSensor.java
      - MainActivity.java
      - SendDataToServer.java
  - res
    - layout
      - activity_main.xml
      - activity_proximity_sensor.xml
      - activity_send_data_to_server.xml
  - AndroidManifest.xml
  - build.gradle
- createGeoJSON.php
- index.php
- processCoords.php
- processRequests.php

The 'assignment' folder holds all of the information regarding the mobile phone application such as the java files and the layout xml files.

The four php files in the Chalks Estate Agents folder are the files used for the web-based application.