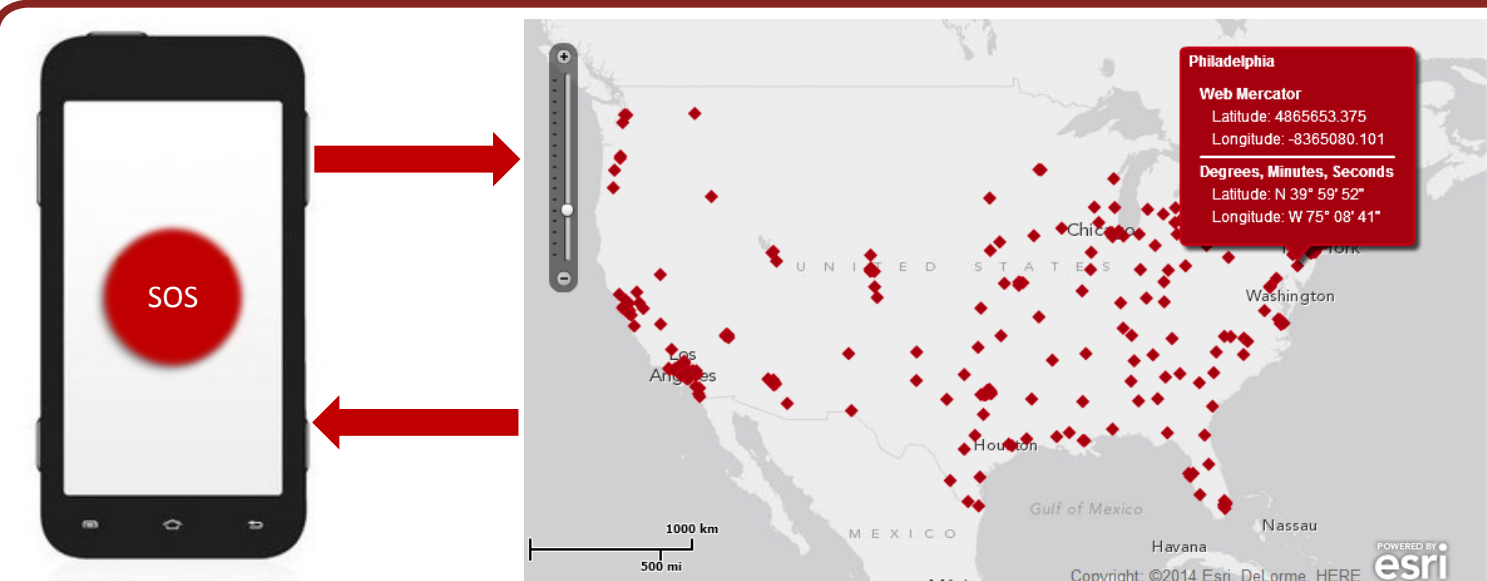


EMERGENCY RESPONSE SYSTEM FOR SENIORS

A Location-based Rescue Service App

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MUSA Capstone Project

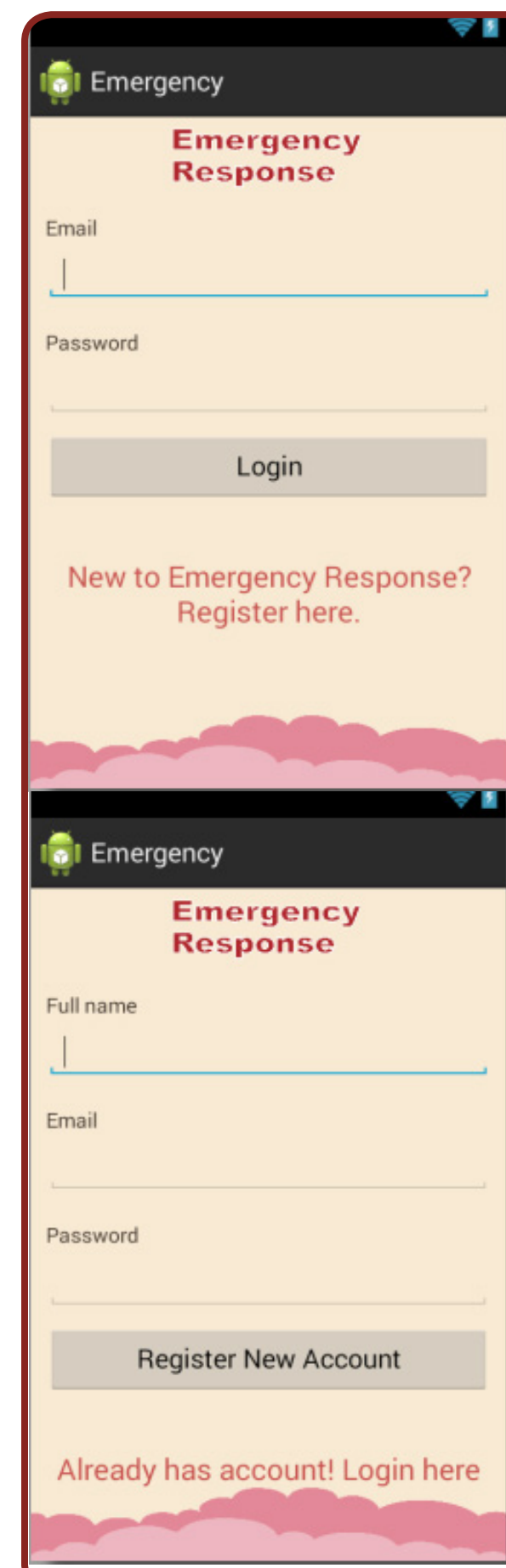


Background:

Recently, a health topic receives lots of attention with our aging population: senior care. As the demographics change and larger numbers of people retire than at any other time in history, communities must be equipped to offer services to seniors.

My project aims at developing a fast, direct, and efficient emergency response system for seniors, which contains two parts – the server and the user. For users, I have developed an Android app that enables seniors to send their location signals to the servers. The hospitals, or servers, could then check emergency updates on a dynamic map. Once the emergency signal is sent, the staff in the hospital will call the clients, send an ambulance, get in touch with their doctors, and contact the clients' family members. This app is designed as a more cohesive alternative to the traditional call and response system.

And I used Android Development Tools to develop this Android app. ADT is open-source, free to everyone who wants to build an Android app. ADT is a plugin for the Eclipse IDE that is designed to provide a powerful, integrated environment in which to build Android applications.

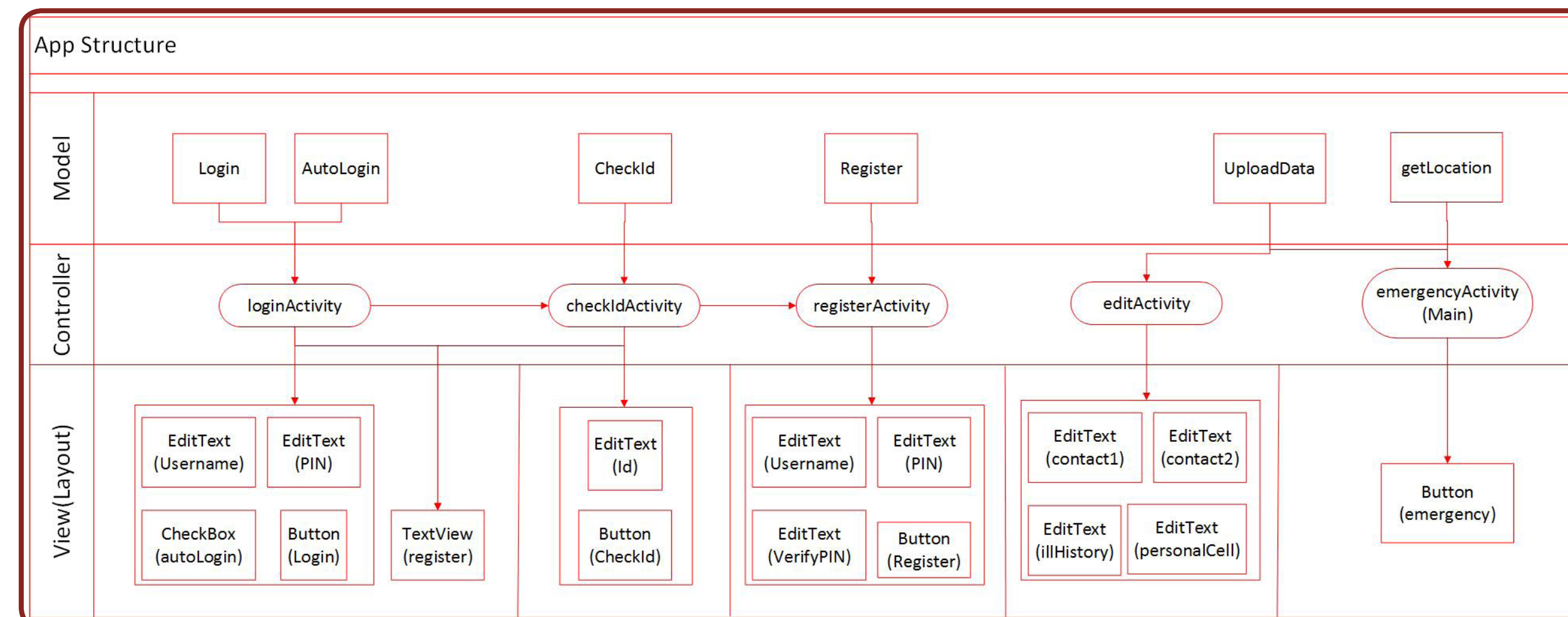
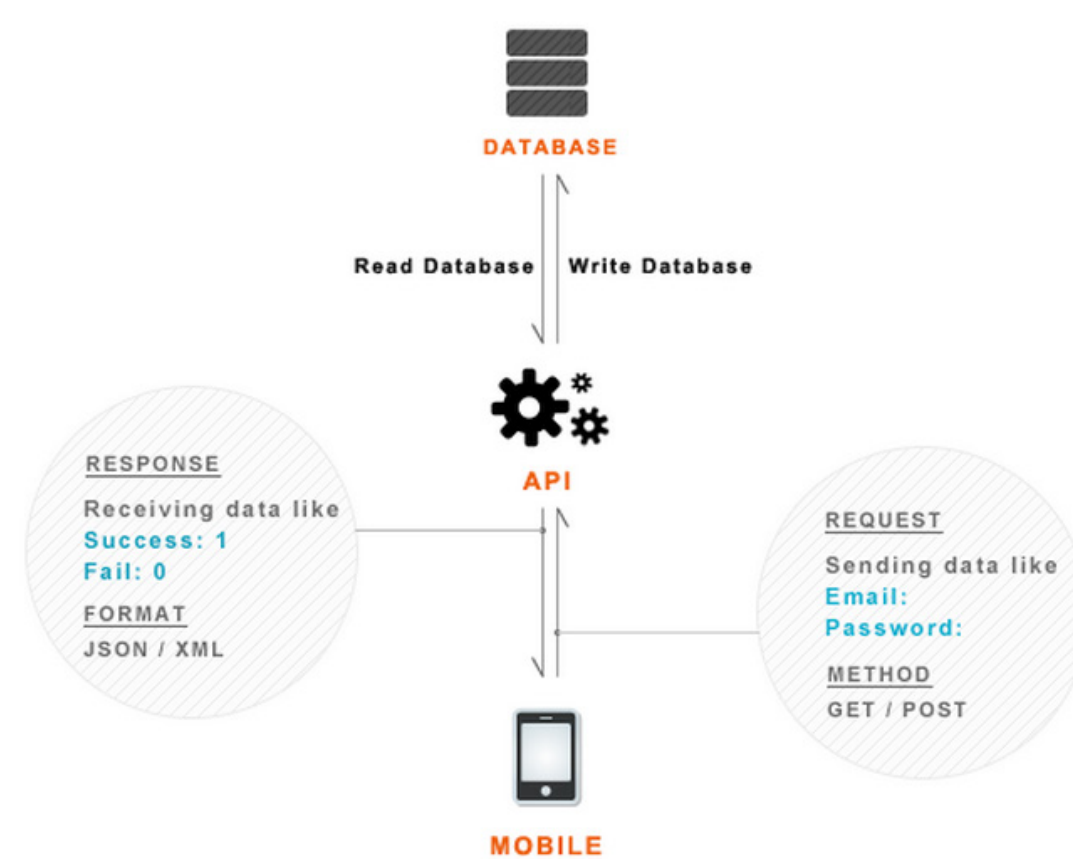


Login and Register:

The login and register process is based on PHP, MySQL and SQLite.

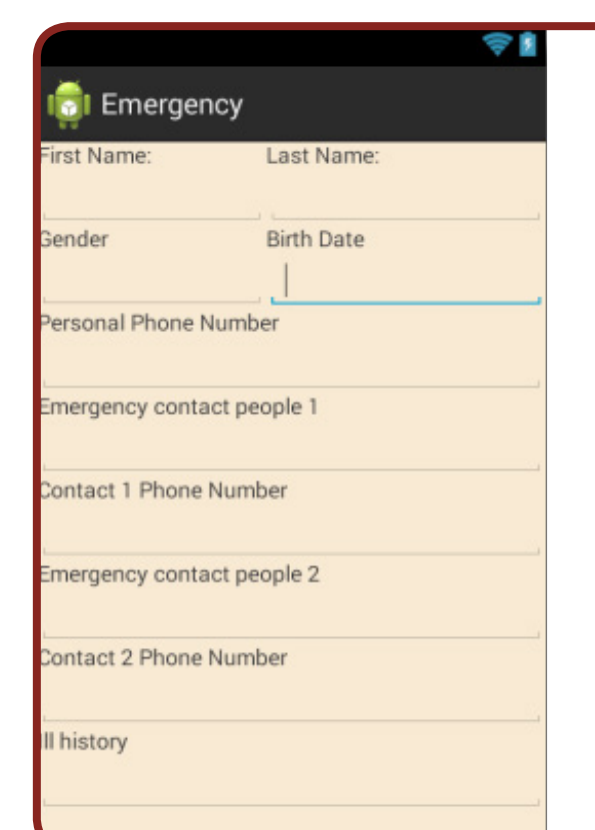
- Accepting requests by GET/POST methods
 - Interact with PHP classes to get data from database or store in database
 - Finally will give output in JSON format
- When creating MySQL database and tables, it is convenient to use phpMyAdmin.

phpMyAdmin is a free and open source tool written in PHP intended to handle the administration of MySQL with the use of a web browser. It can perform various tasks such as creating, modifying or deleting databases, tables, fields or rows; executing SQL statements; or managing users and permissions.



The Android App I designed for my project focuses on emergency response care for seniors and has six models and five controllers. For each controller, there is a particular layout. Among the four layouts, three of them are ScrollView xml.

The loginActivity controls the login process and the RegisterActivity controls the registration process. After login, the clients can edit their profile with the UpdateActivity, which can be edited by their family members. The main menu which only contains a button of Emergency alert, is controlled by the emergencyActivity which has two models. One gets the current location of the client via GPS data and the other uploads alert to the server.



Update Personal Profile:

The update profile function contains several EditText boxes. These EditText boxes collect the user's personal information including their emergency contacts' information and their illness history.

Each EditText box is assigned with a particular input type. For example, the boxes below "Birth Data" can only receive date data.

These information would link to the login database. And when the emergency alert button is pressed, these information along with the GPS data would be sent to the server. For safety purpose, only the last name and personal phone number will be shown on the dynamic map.

Emergency Alert:

The simple interface of Emergency Alert is design for seniors among which some cannot even read. Yet it has many functions. Once the button is clicked, it will quickly receive the location data, namely the GPS data and then send the data to the server.

Location Data in Android is provided by the LocationManager system service.



This service provides location updates to all applications who are interested in them, and it delivers those updates in one or two ways. And since this app only has one button, the length of time that receives location data would be really short.

Another function is to send data to the server, which includes both the location data and the user's information.

Dynamic Map:

The server, which is designed as a web-based dynamic map, is meant to be used by the nurses or the database managers in the hospitals, so that when they see a new emergency alert signal, they would call the user immediately.

This dynamic map mainly shows the users' location in a form of latitude and longitude data. The user's emergency alert will be marked as a red point and when the mouse rollover it, the information of the user will be displayed. The picture below use the whole U.S. for demonstration. Yet the real map would concentrate on a small scale region, such as Philadelphia.

If some further functions can be realized, this app would be much more meaningful. These functions includes: customize the users' preference in choosing hospitals, delete users' information that have been dealt with,

