Documentation

For

Philly SafeMap

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Revision History

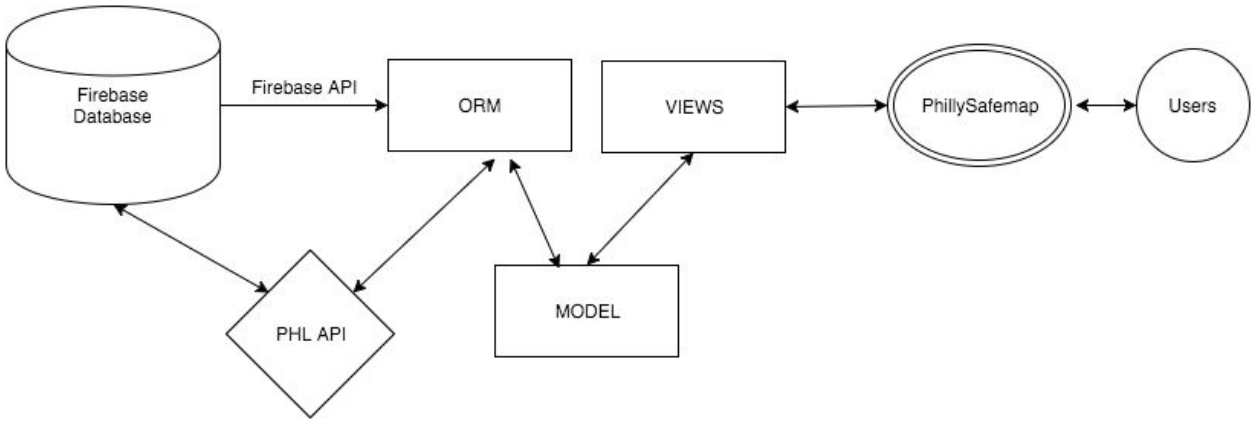
Version	Date	Author	Change Description
1.0	3/12/2016	Tri Nguyen, Anh Huynh, Mahmuda Liza, Ryan Efendi, Tu Nguyen	Initial version.

Contents

1. Project Description Objectives:

Philadelphia is ranked as one of the cities that has the highest crime rate in the world. Specifically around the Drexel campus, crimes such as theft and robbery occur frequently. Majority of the victims are Drexel students who walk home from class at night. We realized this increasing crime rate could affect safety around the campus. Therefore, we want to build the application to help students view all the recent crimes within the area to find the safest way to the destined location.

2. Design Diagram:



3. Interfaces:

3.1 User Interfaces :

Philly SafeMap is a mobile application that allows user to enter location in philadelphia to search the nearby crime locations for. Crimes are categorized according to the danger types. By choosing what type of crime to display, user can customize their crime search. There are features to see crimes within a date range along with a feature to call emergency contact.

3.2 Software Interfaces:

Our mobile application is solely developed on android studio. Firebase data service is used for storing user information and crime locations on database.

3.3 Hardware Interfaces :

Philly SafeMap is a mobile application. Hence the app will only run on mobile devices. More specifically, the device has to be any android device with version 4.0 and above.

4. User Characteristics:

1. Philadelphia residents
2. Anybody who is interested in knowing about the crime data in philadelphia area.
3. Users of any age; however expected will be 10 years and above.
4. Our main targeted users are middle, high school and college students.

5. Division of Labor Outline :

Tri Nguyen:

- Utilized the Firebase backend service to build the login/sign up page
- Write up the documentation and presentation slides
- Integrate the login/signup activity and the main activity

Ryan Efendy:

- Handle algorithm for multiple activities of the application
- Utilize google web service client to build the map and population data/icon onto the map

Anh Huynh:

- Utilize Firebase back-end service to store data into the Firebase database
- Utilize web service client PHL API to get the crime data

Tu Nguyen

- Handle the front-end portion
- Help with back-end
- Sort the crime by type

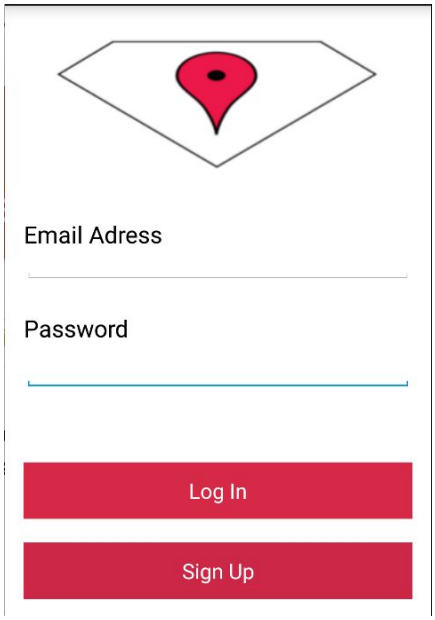
Mahmuda Liza

- Documentation
- Database
- UI for displaying crime events given two locations

6. Project Feature and Implementation Details:

Philly SafeMap allows user to signup and or login to the application. If user does not have an account, user may create an account, then the user will be directed to login. After logging in, user is directed to the main screen of the application which is the a map of the user's current location. On top of the screen there is a search bar that the user may enter to go to a different location(Geolocation). Clicking search enables a display of crime spots that are shown with markers. On the top right hand corner of the screen, there is a menu options, where the user have the functionality of changing the map type to satellite, hybrid and normal. In the bottom left hand corner, the user can find the 'setting' button, that directs to a new screen which user have the ability to filter out based on crime types (Homicide, Rape, Robbery, Aggravated Assault, Burglary, Theft and Motor Vehicle Theft. The user will check on which crime type they want to view and on the top right hand corner there is a save button, where the user can save his/her setting and return to the map. On the bottom of the setting page, the user can find four buttons, from left to right (Map, Date-picker, Emergency Contact and View Sources). The Map button will let user return to main screen and display the map with their current locations and all of the crime user had selected to view. Date-picker button allows user to choose a date range or select a customized date range going back from today. Emergency Contact option will let the user make a phone call or text message their desired emergency contact with a press of a button and a predefined text message. Lastly, View Sources button will bring user to a website of PHL Crime Mapper(http://www.phlcrimemapper.com/), which is where we have obtained our crime data from.

6.1 Login page:



User has 2 options. One is to log in with her registered email address and password. If not registered, user can click on sign up button to create an account.

6.2 Implementation Details :

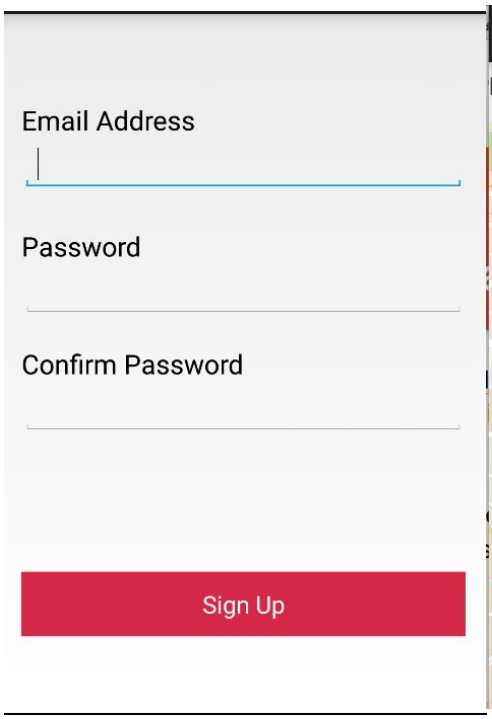
- Build the xml layout with textview and edittext.
- Integrate the xml layouts and java source files.
- Integrate Google Login

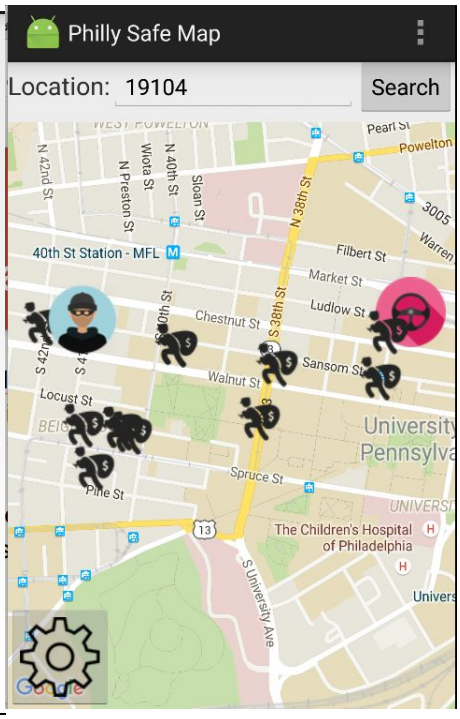
6.3 Signup Page: User can fill in the required information to receive an authorized account. After clicking on sign up, the application will redirect user back to the login page.

6.4 Implementation Details:

- Sign up button with onClick feature
- Detect user click with onClick(View v) overridden method
- Store user's' registration information to Firebase

6.5. Map Page: This page allows user to type in their desired location. Then it displays all recent crimes within the area.



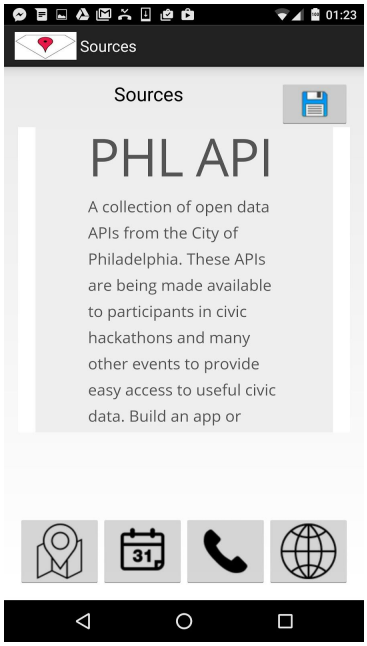


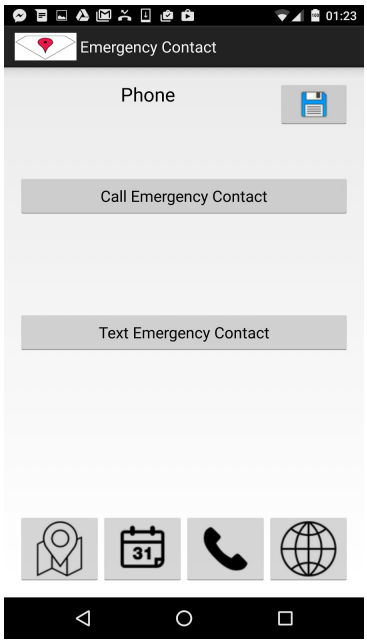
6.5 Implementation Details:

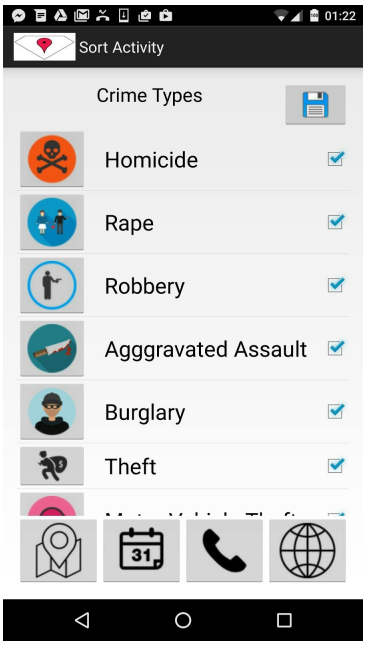
- Utilize the Firebase to:
    - If access within past 24 hours, download Crime data from the database instead of making network call to the API, thus saving running time and resources
    - If not, make an http call to the API and retrieve json data for crime occurrence

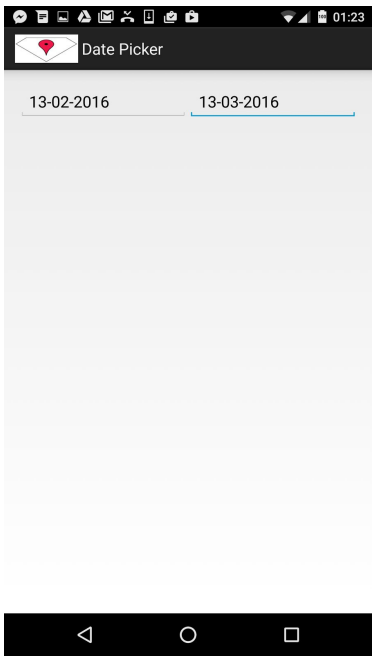
- Utilize google service to build the map
- Populate the icons onto map
- Store crime data into Firebase database

6.6 Settings Page : This page combines many different functionalities as explained below with figures. Four icons on first three following screens are directed to four distinct functionalities









as explained earlier. Upper Left figure here shows the resource page. The middle one shows emergency contact page. Upper rightmost one shows the list of different crime types for user to specialize their display. The lower left figure is the date-picker one which allows user to pick date range to better filter the crime. All four features are accessed via Settings page.

6.6 Implementation Details :

- Upload icons from website and move them to rsc/drawable folder
- Create appropriate activity and intent calls upon specific button click

7. Tools Utilized:

- Repository: Bitbucket
- Web Service Client: PHL API (collections of open data in Philadelphia)
- Database: Firebase
- Service backend: Firebase
- IDE for the app: Android Studio
- Genymotion and built in Android Studio Emulator
- Android Devices for App Testing

8. Constraints:

1. User can only see at max 30 days worth of crime data as any information before that is not stored in our database.
2. User's' login data is stored, however, the information is currently not being used for crowd sourcing.
3. Crime data are only for Philadelphia, hence users searching for crimes outside philadelphia will not fall under our expected user group.
4. Android platform can support the application since the app is built using android platform. So any other operating system except android will not support our app.

9. Assumption and Dependencies:

- Dependencies:
    - PHL API: which is a collection of open data APIs from the City of Philadelphia. Our application rely heavily upon PHL API, because we are obtaining our crime data from the city's database.
    - Firebase: a backend service, which include data storage and user authentication.
    - OkHttp: An HTTP & HTTP/2 client for Android and Java applications
    - Google Play Services: Google-powered features such as Google Maps.
    - Gson is a Java library that can be used to convert Java Objects into their JSON representation.12
- Assumptions:

  Philly SafeMap assumes that the user satisfies the following conditions:
    - Possession of an Android Phone
    - Wifi/Network Data
    - Location Service