
Helping Hands Emergency Help and Safety System

CP 670 - Android Application Programming Project

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Abstract

- Modern societies are confronted with an increasing number of abnormal events, crises, disasters and accident. This type of threats can make a person in emergency.
- To overcome these situation, there arise a need for Emergency Help and Safety System. Helping Hands is built for the same reason.
- Helping Hands is an android application which increases the chance of help in case of emergency by notifying nearby volunteers.



Logo of Helping Hands Android App

OVERVIEW

- Technology
- Features
 - User account management
 - Call & Text
 - Request & Accept help
- Class Diagram
- Activity Diagram
- Technical difficulties
 - Live Google Map
 - Generating push notifications
- Conclusion & Future work

TECHNOLOGY



Android Studio



Java



Google Maps API



Google Cloud Firestore



XML

FEATURES

- Features of Emergency Help and Safety System :-
 - ☐ Users can contact government emergency services (911)
 - ☐ Users can see available volunteers within the range of current location.
 - ☐ In case of emergency user can trigger sos alert which will notify user selected contacts and live location of user will be sent to them every 5 minutes.
 - ☐ User can broadcast help request which will notify nearby volunteers and volunteers can accept the help request.
 - ☐ User account management is also supported by system.

FEATURES (Cont.)

- User account management

← Sign Up - Helping Hands

Register yourself by providing required details below

First Name _____ Last Name _____

Email Address _____

Password _____

Contact No. _____ Age _____

Address Line 1 _____

Address Line 2 _____

City _____ State _____

Postal Code _____ Country _____

Gender : ☒ Male
☐ Female

☐ Register as Volunteer

CREATE ACCOUNT

helping hands (v.1.0)

Login - Helping Hands

Welcome to Helping Hands

Mobile No. _____

Password _____

LOGIN

DON'T HAVE AN ACCOUNT? SIGNUP

helping hands (v.1.0)

Edit Profile

User Name :
Rushi _____ Parmar _____

Email Address :
rmparmar117@gmail.com _____

Contact no : _____ Age : _____
2268996687 23

Address :
180 Brybeck Crescent as _____

Kitchener _____ ON _____

N2M 5G4 _____ Canada _____

Gender : ☒ Male
☐ Female

☒ Register as Volunteer

UPDATE PROFILE

helping hands (v.1.0)

Settings

My Profile
Edit profile details

Emergency Contacts
Manage Emergency Contacts

Change Credentials
Change/Forget password

Deactivate Account
Account will be deleted permanently

Log out
Session will be destroyed

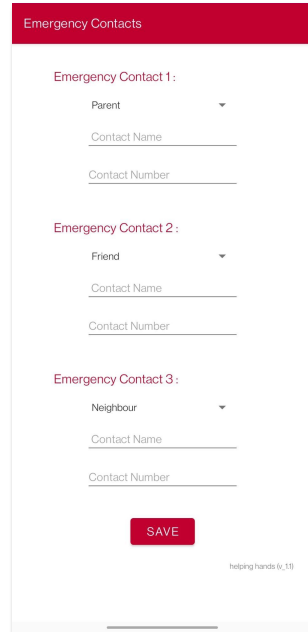
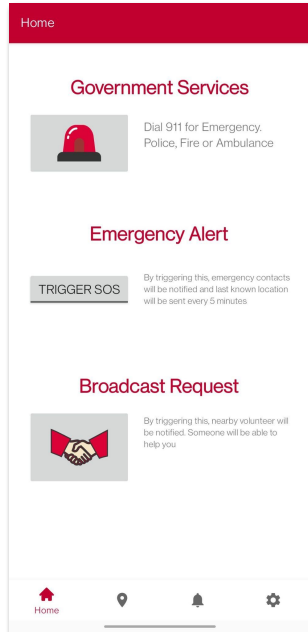
Help & Feedback
FAQs & Feedback option

helping hands (v.1.0)

Home Location Notifications Settings

FEATURES (Cont.)

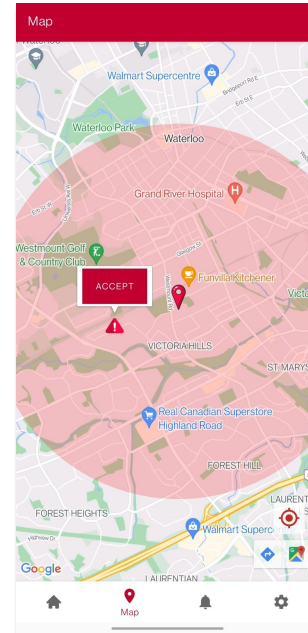
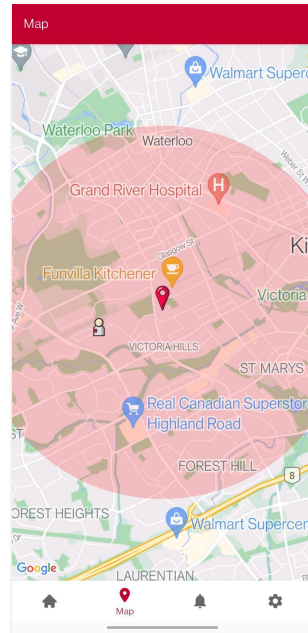
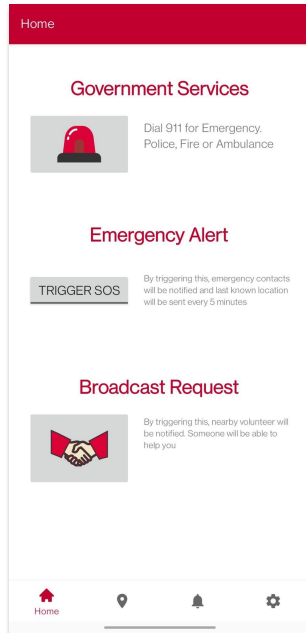
- Call & Text



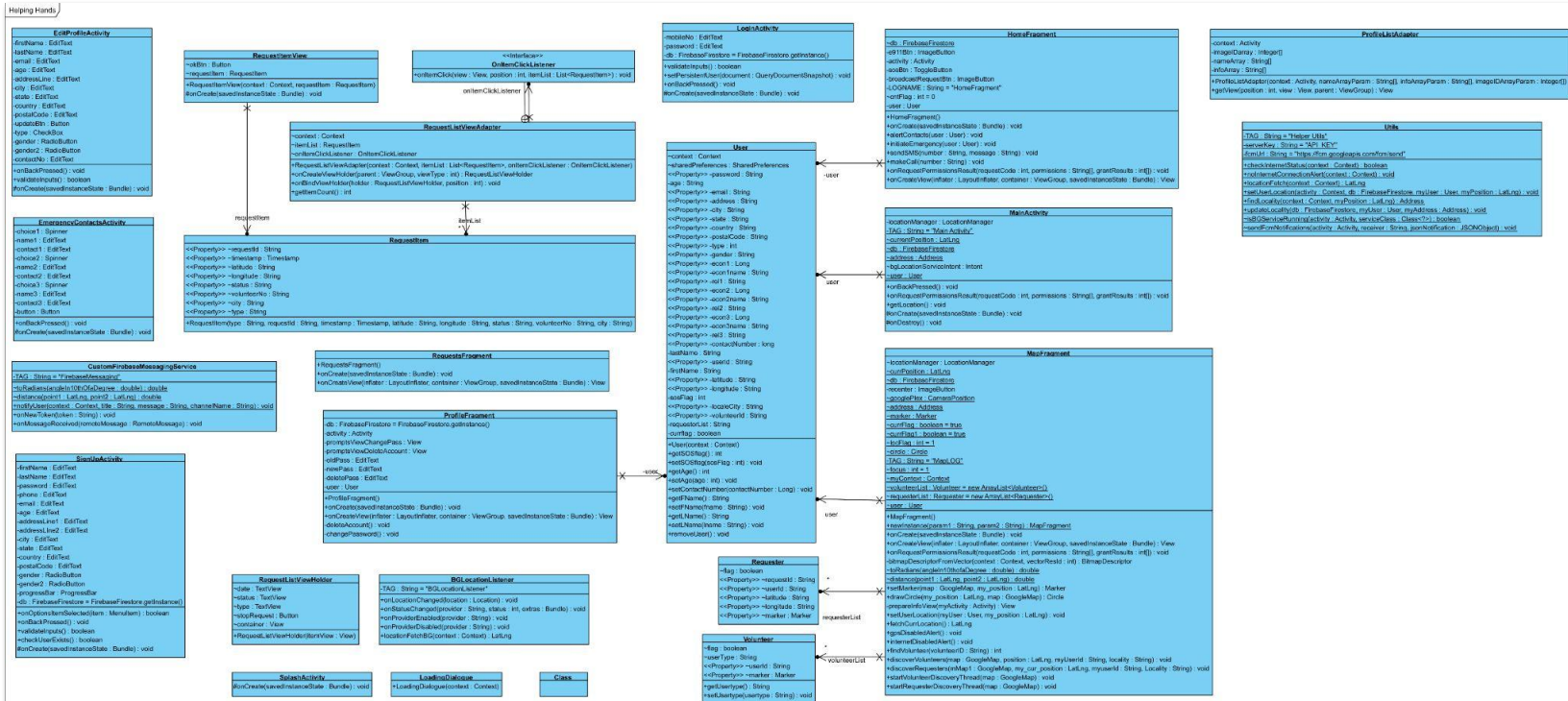
1. Government Services directly dials local emergency services “911”
2. Trigger SOS Button sends text messages containing location, on the interval of 5 seconds, to user selected emergency contacts.

FEATURES (Cont.)

- Request & Accept help

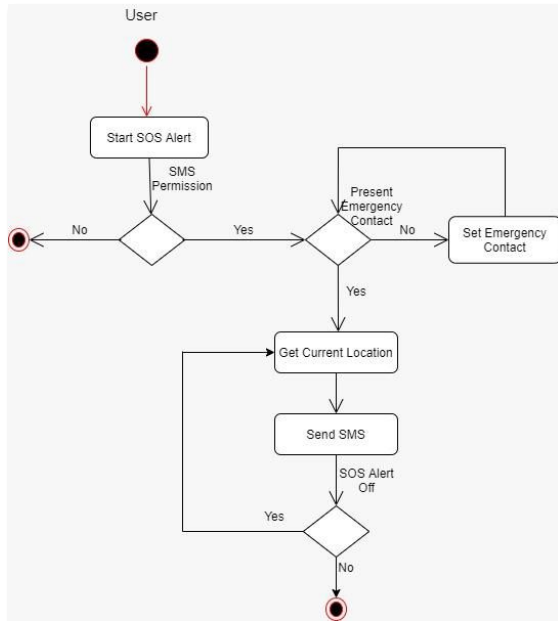


CLASS DIAGRAM

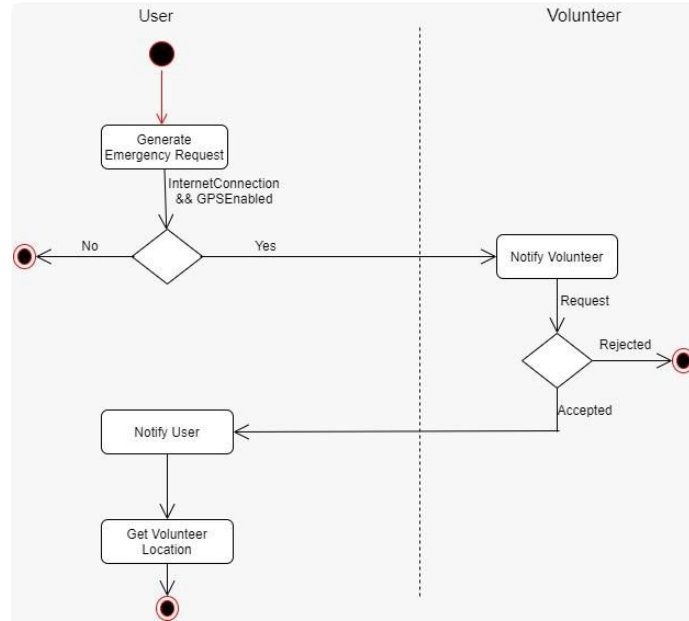


Activity Diagram

- Start SOS Alert



- Broadcast Emergency Request



TECHNICAL DIFFICULTIES

- Live Google Map :
 - For any type of user, the google map displays live location of all the nearby volunteers. Additionally, Map should also keep track of all the nearby emergency requests and their state if the user is volunteer.
 - To achieve this functionality, multiple infinite loops were designed which runs asynchronously, each updating the google map simultaneously by connecting to database every 5 seconds and retrieving the required information.
 - Hence these loops continuously reads the database and update the map.

TECHNICAL DIFFICULTIES

- Generating push notifications :
 - When any nearby user generates emergency signal, the app should generate a notification even if the app is closed, or device screen is locked.
 - Initially the idea was to use infinite loop similar to map activity, and run it as background service. But the latest versions of Android does not allow background activities to run for longer period of time in order to optimize the battery usage.
 - Currently, we are using Firebase Cloud Messaging (FCM) which sends the information to the Android App on it's own, without the receiving user continuously monitoring the database.
 - For the firebase database to send push notification, a http post requests must be made, which is achieved in the app using open source http library for android named "Volley".

CONCLUSION & FUTURE WORK

- Conclusion
 - By the successful deployment of Helping Hands, team of volunteers will be ready to help those in need. At the time of emergency, users will be able to broadcast emergency signals, application would send information to the selected contacts of user to get help and the local government services could also be informed.
 - Hence by saving many lives and helping the countless, Helping Hands will make sure you get your required help on time.



THANK YOU!