

BITS ZG628T: Dissertation

**Communicating Beacons using the Hybrid
Mobile App(IoT)**

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2014HT13053

Objectives

- The goal of this dissertation is to develop a “Retailers App” that provides same user experience across multiple platforms and communicating with beacons using the same source code and by creating additional IoT interfaces.
- The application should run on multiple mobile operating system platforms without making any changes to the source code.

Internet of Things(IoT)

- The “Internet of Things” (IoT) is a rapidly vast increasing topic of conversation in internet technology, which leads to new business income/ opportunities.
- The Internet of Things (IoT) is a terms for a variety of technologies that describe a number of different ways to connect physical things to the internet.

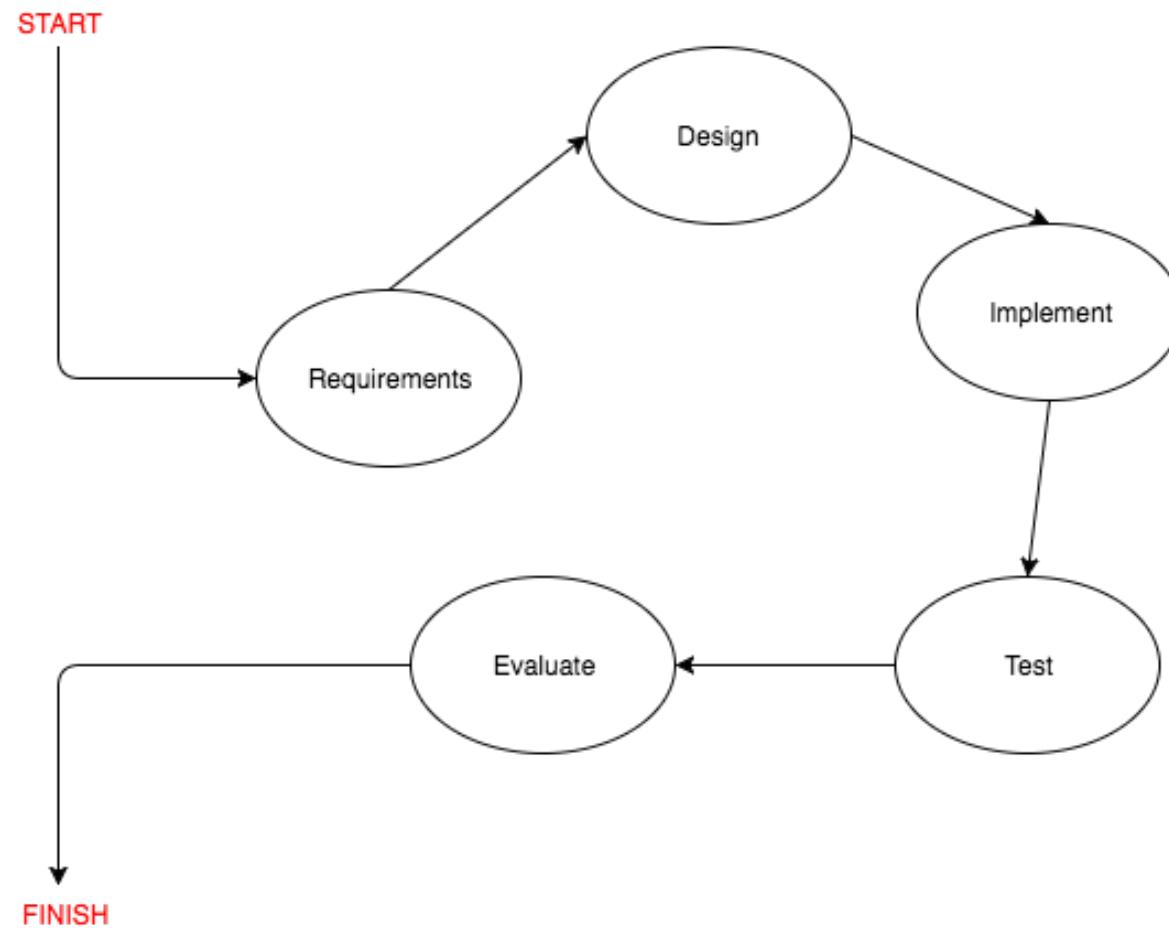
Requirement Analysis

Retailers App mobile application requirements

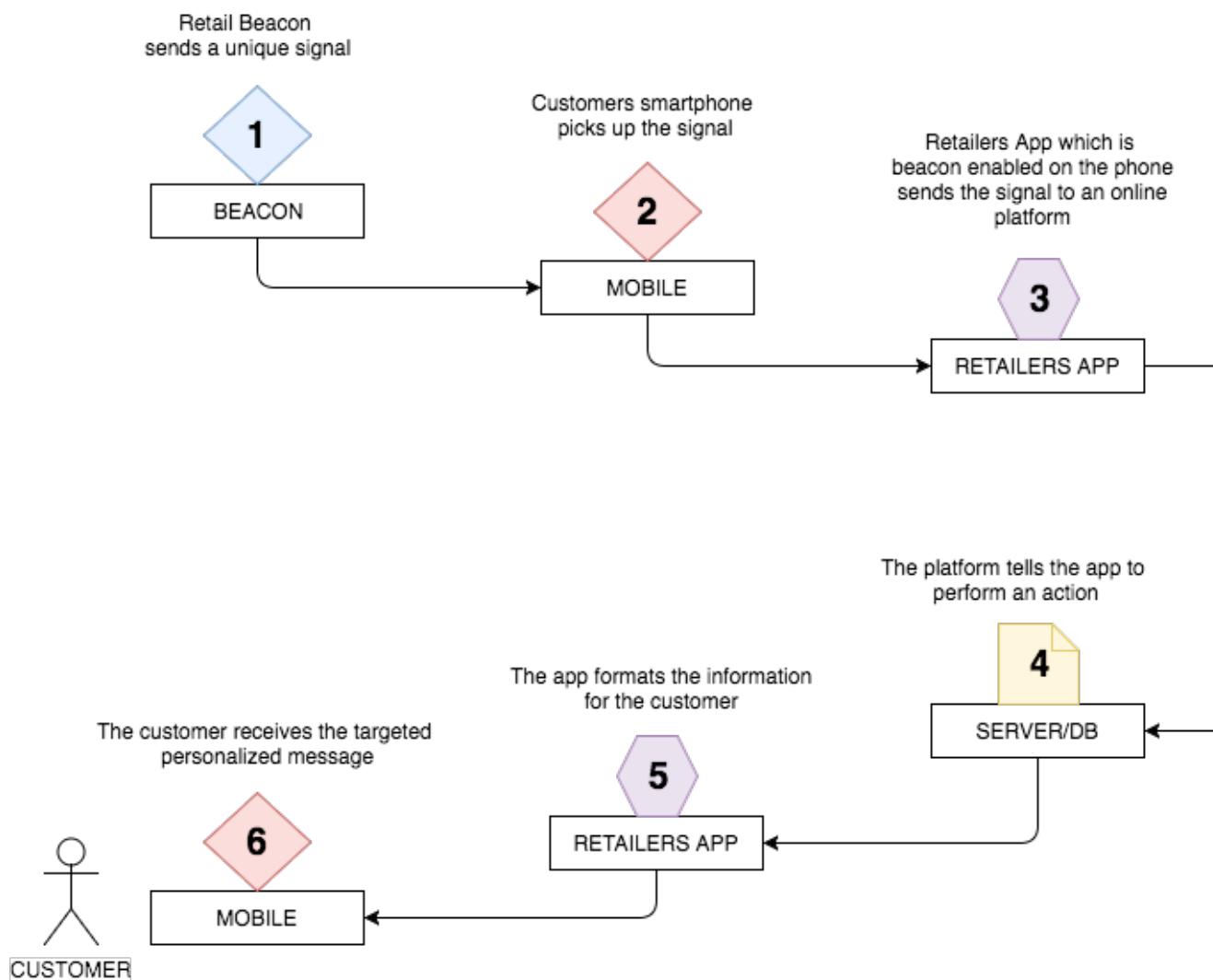
- The user shall be able to view the list of offers.
- The user shall be able to view the details of the offers.
- The user shall be able to invite friends to use the application.
- The user shall be able to modify the profile settings.

Project Model and Design

Iterative Model Diagram



High Level Design

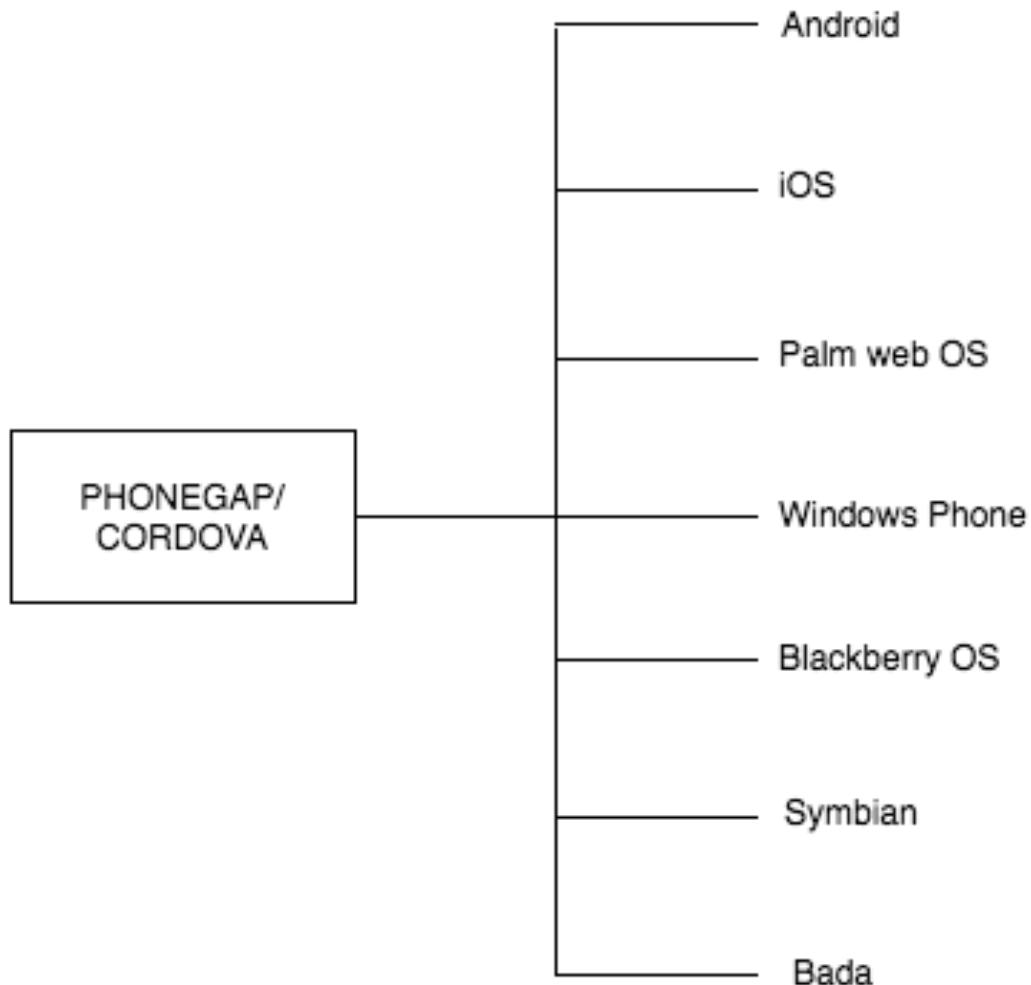


Implementation

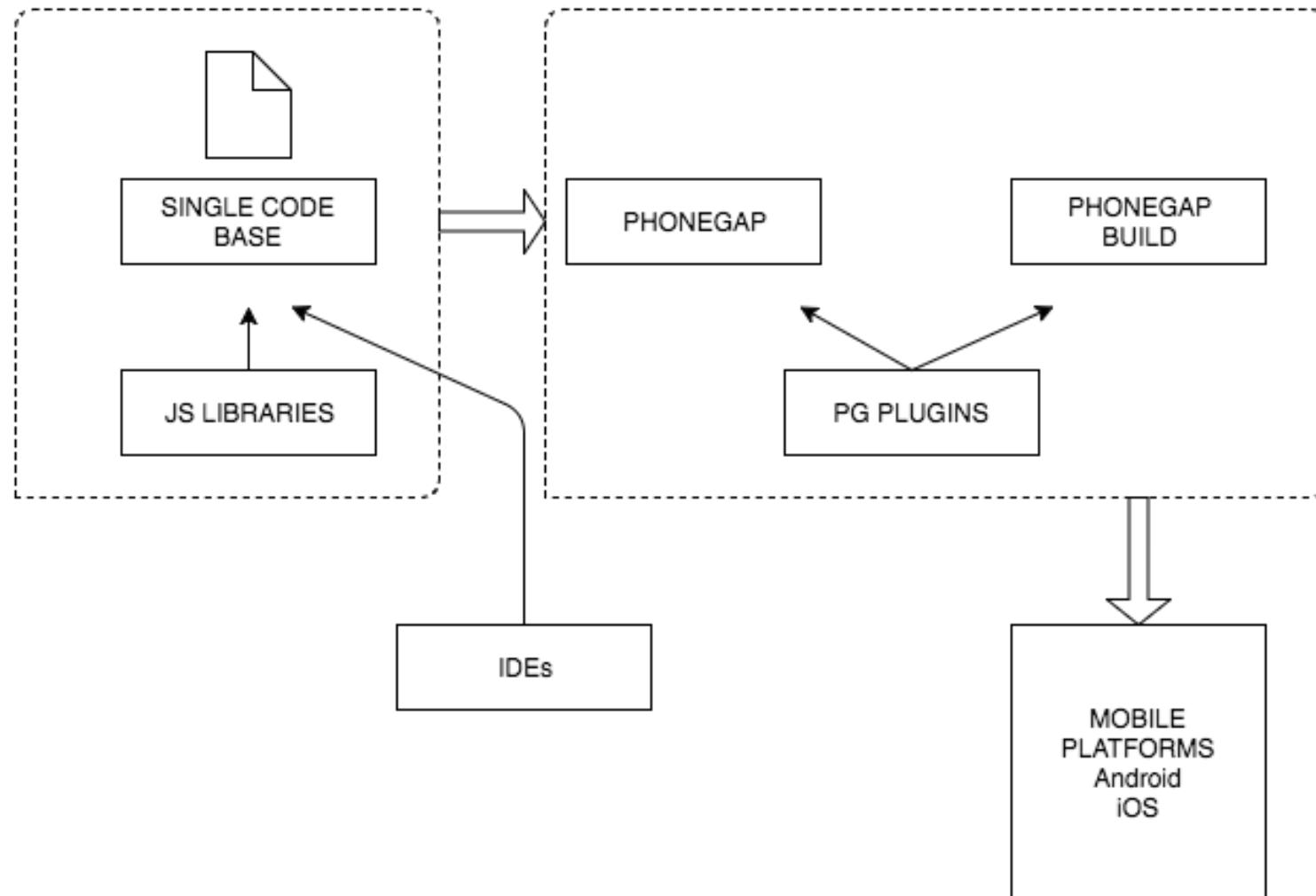
Implemented Languages

- HTML5
- CSS3
- Javascript
- Ionic Framework
- PhoneGap/Cordova Framework
- Kontakt Beacon Api

Mobile OS's supported on PhoneGap/Cordova Framework



PhoneGap Build Compiles and Deploys Mobile Application



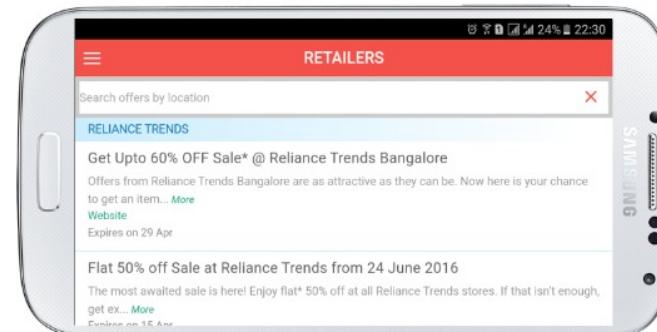
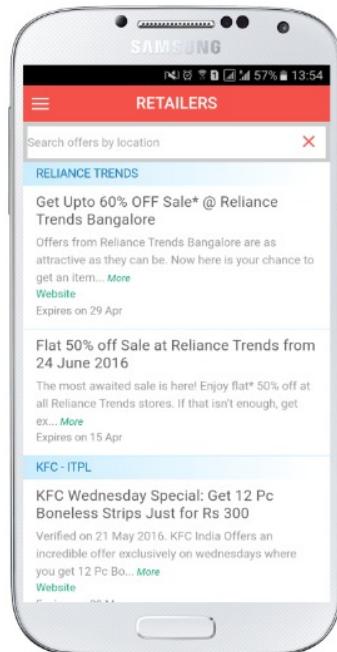
Kontakt Beacon

- Kontakt Proximity Rest Api allows you to programmatically access all your devices, venues and actions.
- Three ranges: Immediate, Near and Far.
- Beacons can have up to 70m range with no obstructions.
- Devices Ranging and Monitoring.
- Devices Connection.



Responsive Screens

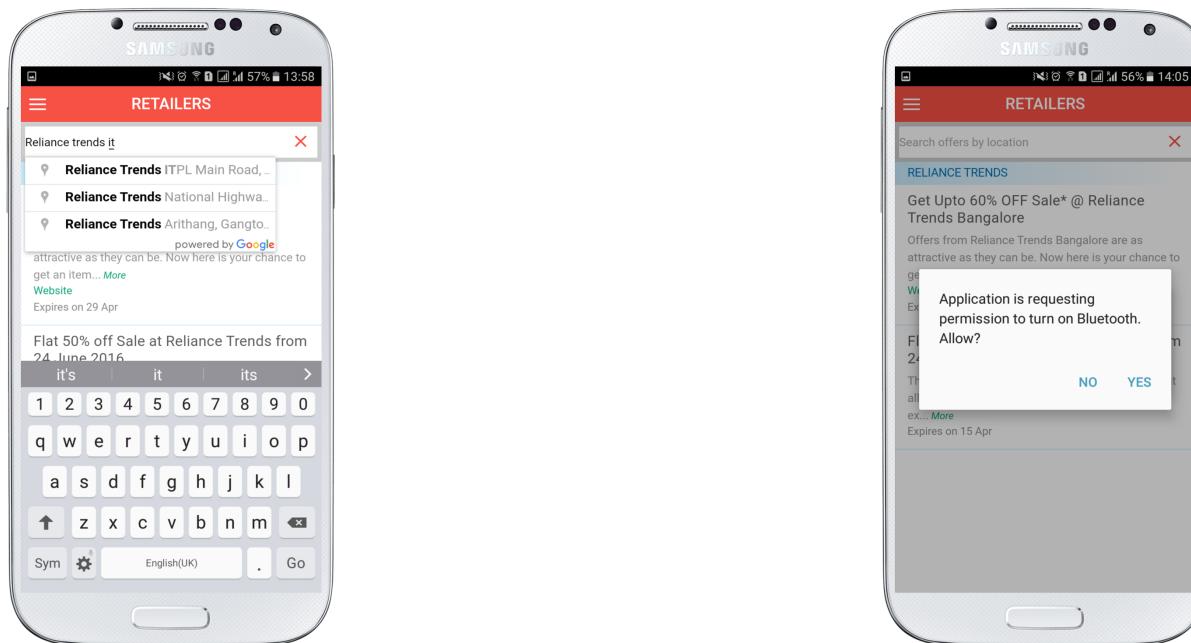
- Mobile devices come in varying screen sizes. It is essential that screen view of the app adapts to the screen size of the mobile device.
- App supports both landscape and portrait mode.



Fetch Offers

User can fetch the offers in two ways

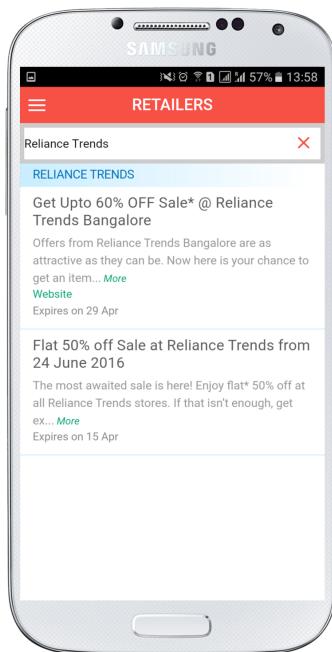
1. Google Places API
2. Kontakt Proximity API (Using Beacon)



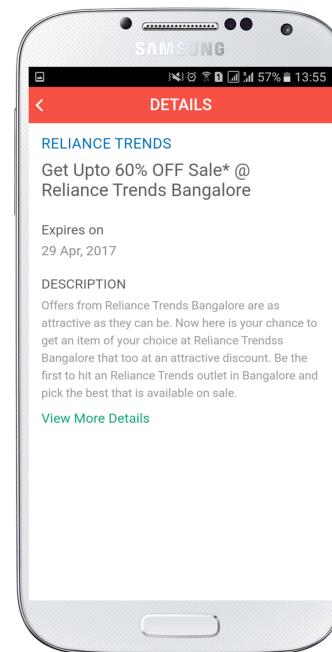
Search Results

Each offer tile displays the Title, Description, Website Link and Offer Expiry Date. When user performs an action on the offer tile, the app navigates to the detail View.

Offers View



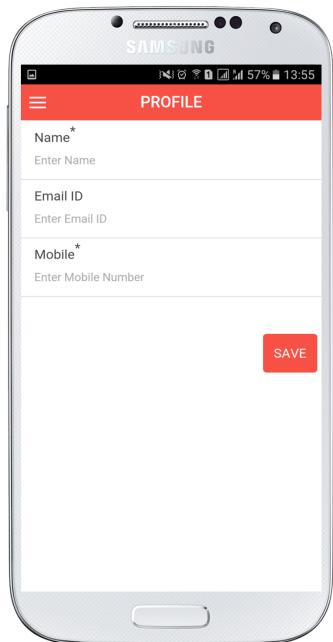
Detail Offer View



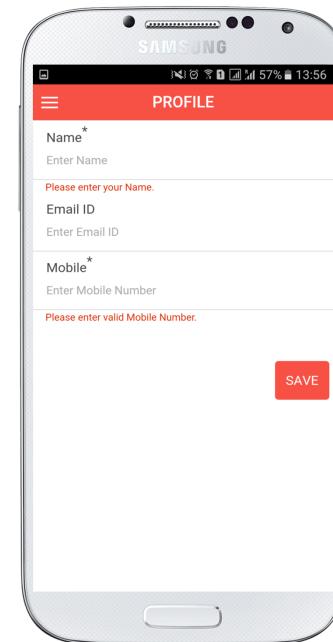
Change Profile

User can edit and save the details Name, Email and Mobile Number. App will collect the user info to send the notifications based on user's search behavior.

Change Profile View

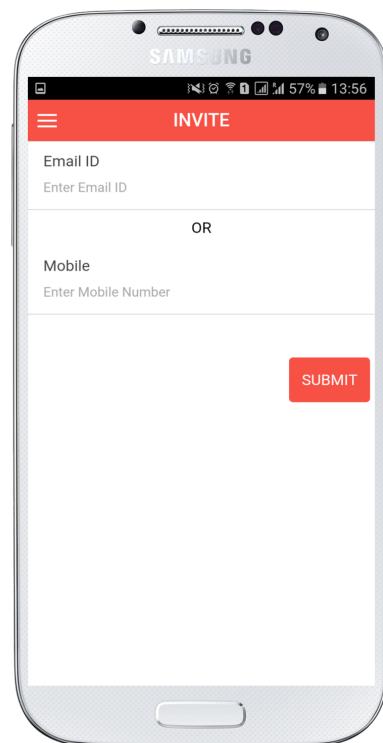


Change Profile View with validations



Invite Friends

User can invite friends to use the 'Retailers App' through an email or a mobile number. The Email and SMS contain the play store link and details of 'Retailers App'.



Testing and Result

- The application was tested based on the requirements and overall user interface design.
- The result of the test showed that the project performed well, the requirements and design specification were met.
- Due to the limited available resources, the testing was only carried out on Android and iOS mobile operating system platforms.

Summary

The outcome of the dissertation validated as the HTML5 programming is a considerable approach to develop Hybrid Mobile Application and can communicate to the physical devices(Beacon) with the same by introducing native interface layers.

The key findings in the study is

1. Saves project maintenance time.
2. Single source code can be used in different platforms.
3. Need native interface layers to communicate with the hardware components.
4. Can communicate with the physical devices(Beacon).

Conclusion

- The thesis project achieved its goal and met the set requirements of the developed cross-platform mobile application.
- Hence, this limits what feature can be implemented on a cross-platform app except a developer understands the native interface language of the targeted mobile platform.
- The author recommends mobile application developers to assess what choice of development framework is more suitable for each cross-platform mobile application project.



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Thank you