Architecture

This architecture document provides an overview of how the Scout marketing platform system (functionality and responsibilities) is implemented. In particular, the overall architecture style of the system, with a description of components, and their logical and control dependencies are to be described.

System Overview

The Scout marketing platform is primarily a three component system consisting of an Android app and web dashboard using a cloud based database provided through the Parse framework: https://www.parse.com/. As a component based system, data is exchanged to one another using Parse's data interfacing SDKs. In particular, all systems apply an MVC pattern and OOP paradigm. The system primarily utilizes a three tier architectural style:

1. The front-end web server and Android views make up the presentation tier
2. Our logic tier consists of monitoring for beacons on the app and data processing for the overview as well as the heatmap pages.
3. Our last tier consists of a data access layer to manipulate, store, and retrieve the below discussed models to the Parse database.

Objects within the mobile app are modeled using Java classes, the dashboard through JSON, and the interfacing between them through adapting to Parse objects for storage within the Parse database. It should be noted that all data within each component are nonetheless semantically identical with common attributes.

Both the web dashboard and mobile app uses the below object data models:

- Customer: A customer (the user of the mobile app)
- Interval Record: The recorded data from acquired beacons at a moment in time.
- Interval: A grouping of Interval records based on a user session.
- Bluetooth Beacon: A physical beacon belonging to a business.
- Place: A business location to be visited by the user.
- Reward: A business reward associated with a place and to be redeemed by the user

The following data types are created through the mobile app component of our system:

- ❖ *Customer data can be created through the registration activity of the app.*
- ❖ *Interval Record and Interval data is created within background services with each running instance of an app.*

The following data types are created through the web dashboard component of our system:

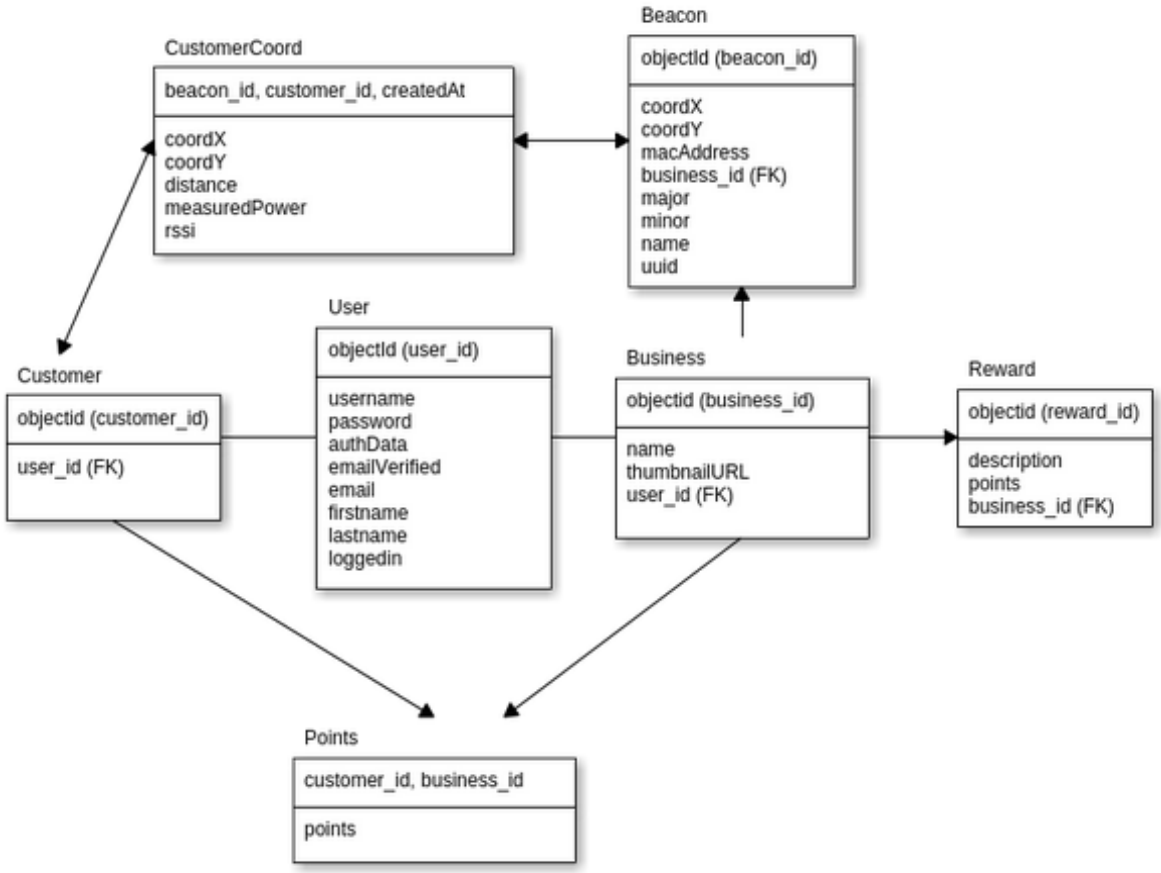
- ❖ *Beacon data can be created and deleted through the heatmap page of the dashboard.*

- ❖ *Place data can be created through the registration activity of the app.*
- ❖ *Reward data can be created and deleted through the rewards page of the dashboard*

System Design

Logical Model (ER Class Diagram)

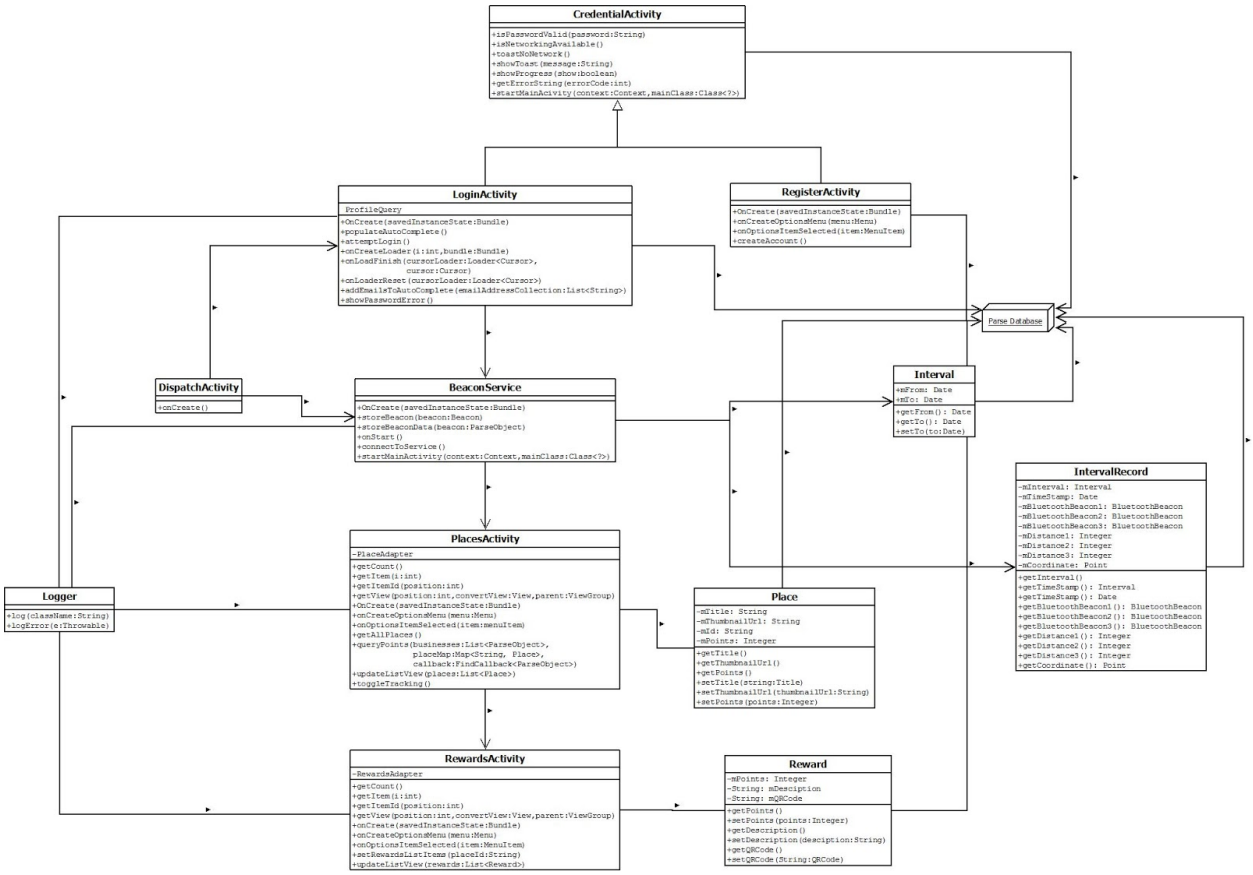
Hi Res Link:



https://raw.githubusercontent.com/jessicayuen/scout/master/docs/v2-er-diagram.png

Component Diagram (UML)

Mobile Components:



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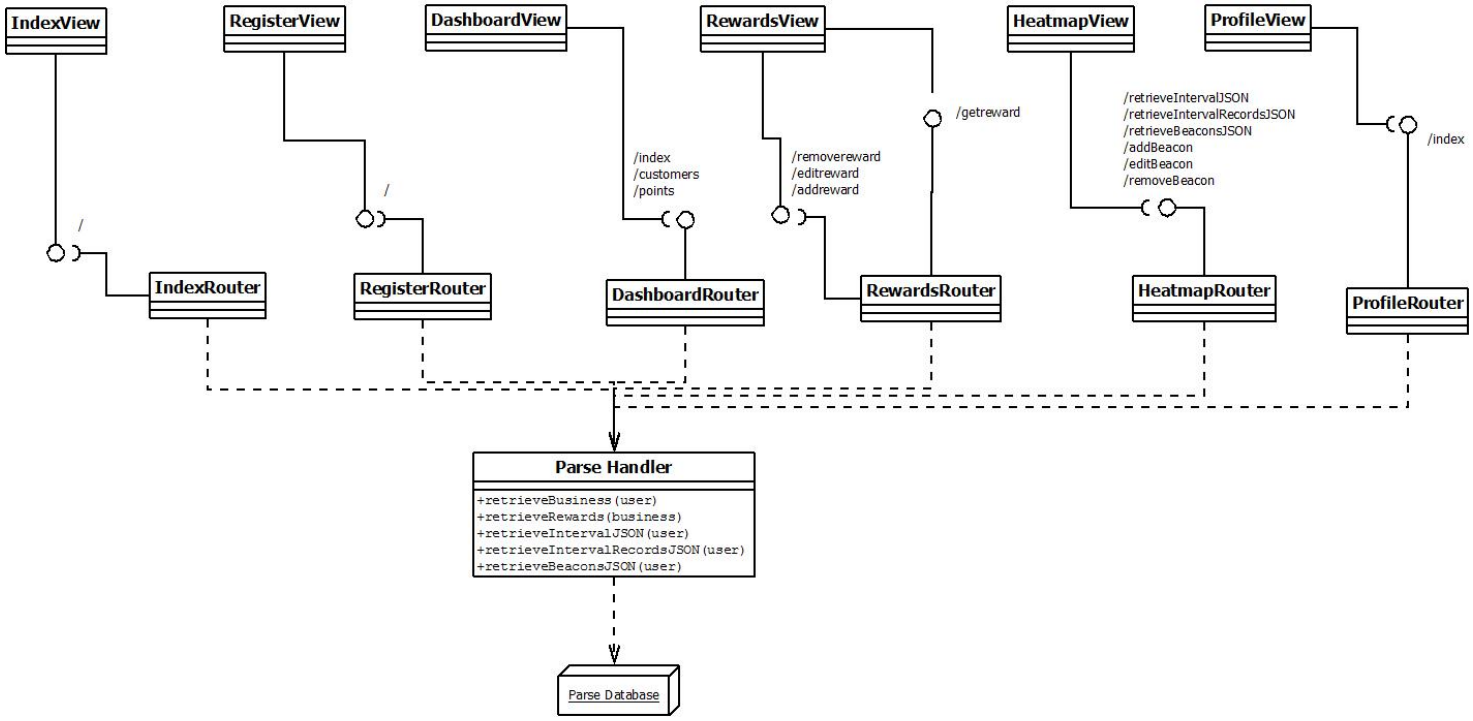
Web Components:



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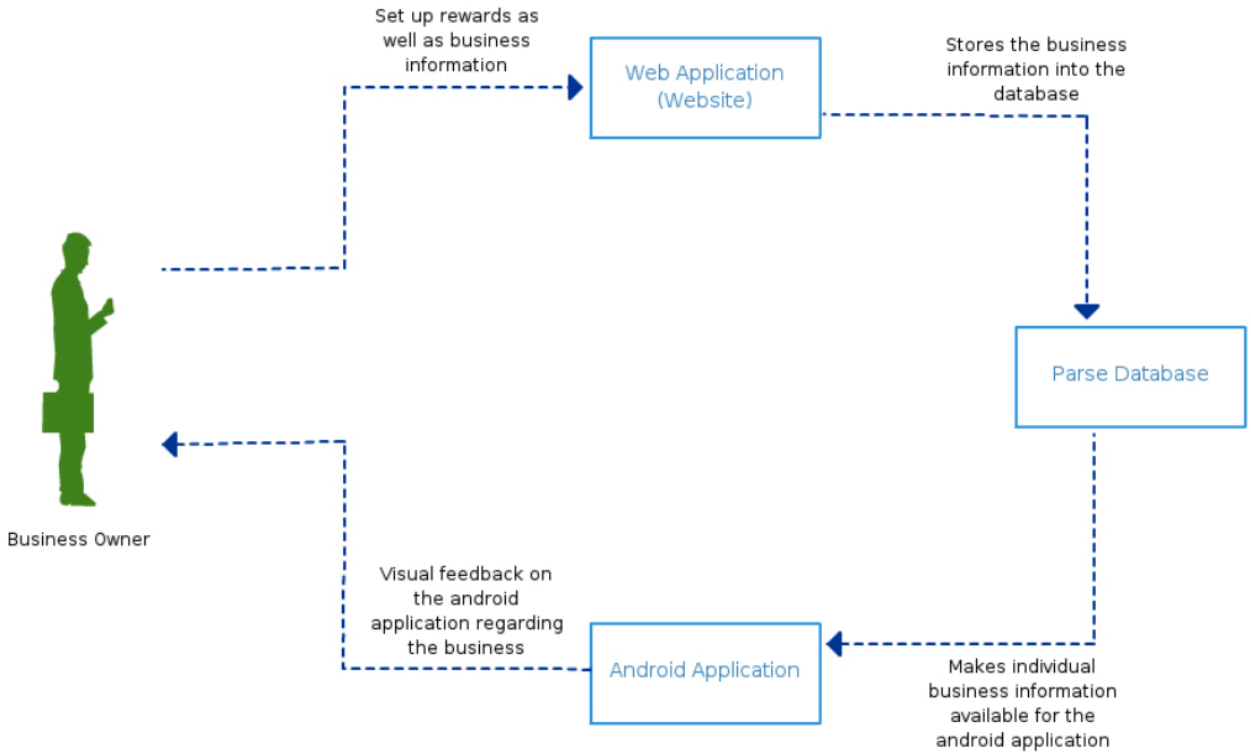
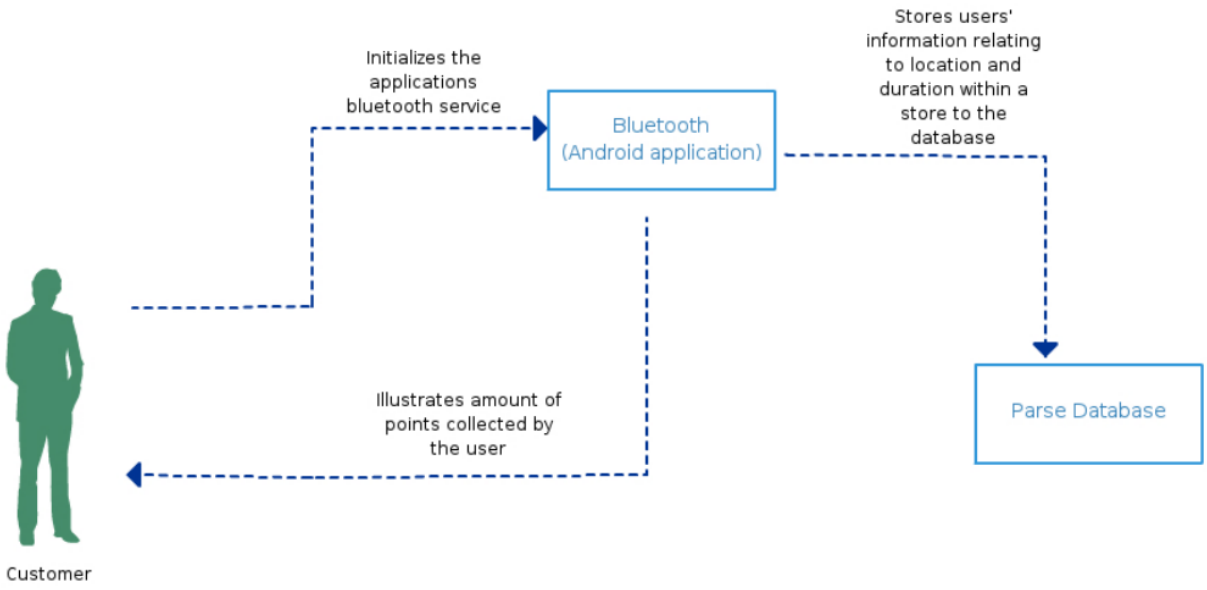
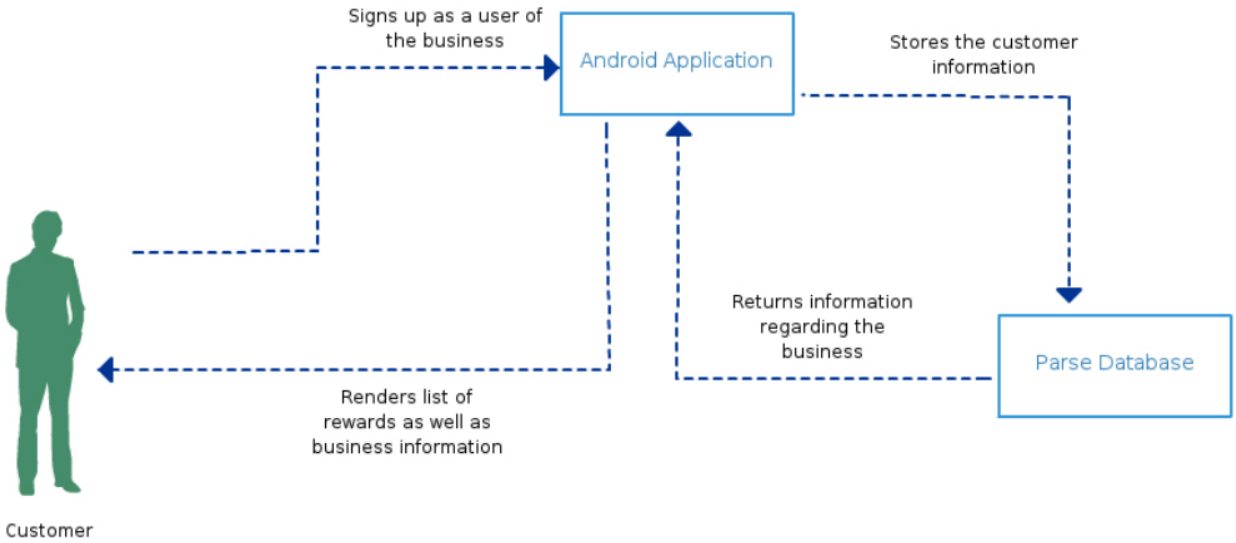
Information Flow Diagrams

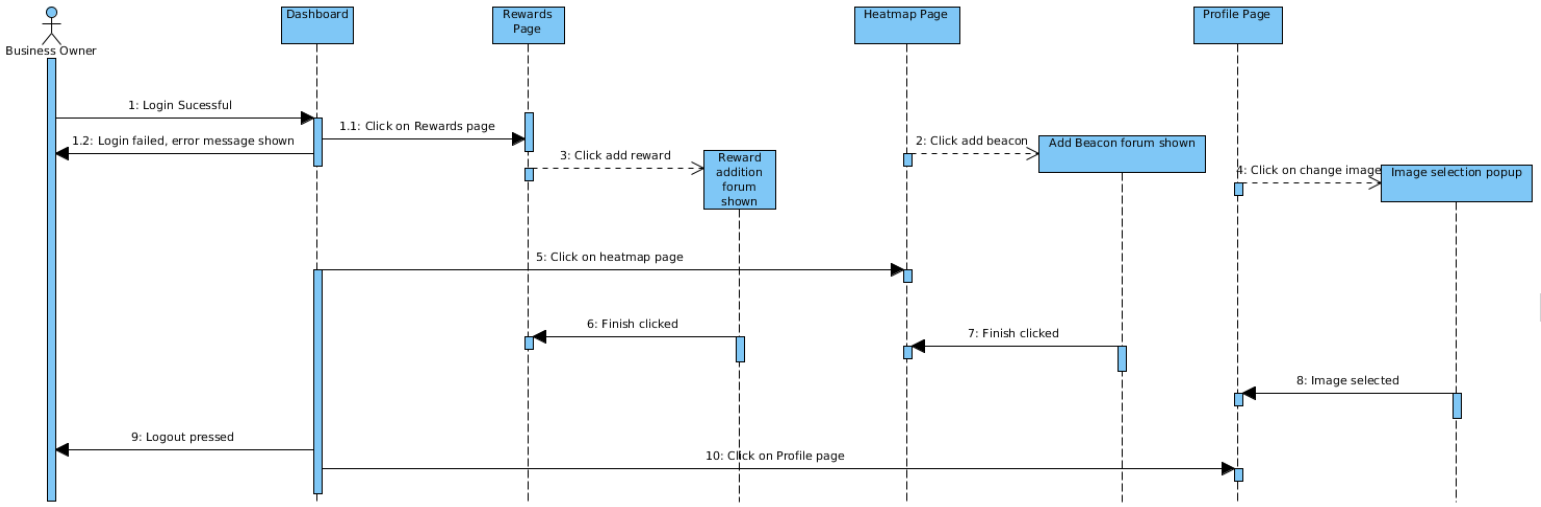



Initializes the applications bluetooth service
Bluetooth (Android application)
Stores users' information relating to location and duration within a store to the database
Parse Database
Illustrates amount of points collected by the user
Customer


Signs up as a user of the business
Android Application
Stores the customer information
Returns information regarding the business
Parse Database
Renders list of rewards as well as business information
Customer

Interaction (Sequence Diagrams)

Web dashboard:



Mobile App: