Requirements Document
Geo-Seek: a GPS "hide-and-seek" app for Android.

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Introduction

Problem Statement

People enjoy using smartphones with others more than ever as the computing power of mobile devices has continued to rise. One of the most useful integrated features of modern smartphones is their GPS functionality, which allows phone providers to provide accurate date/time information for the device, broadcast emergency alerts to users in a risk area, navigation, and cellular telephony. Geo-Seek is a social game that harnesses GPS to enhance the traditional game of "Hide-and-Seek" on Android.

System Personnel

The developers on this project include Alexa LaMontagne, Andy Santiago, Bryan Bradley, and Jonathan Green. They are also responsible for the database design and the front-end product that serves as an interface with the user(s) playing in a session of Geo-Seek.

Operational Setting

The target platform for Geo-Seek is Android (API 19 KitKat).

## Functional Requirements

Users (Host)

Android users can begin using Geo-Seek by downloading it from the Google Play Store. To start a game session, a player clicks "Start Game" which brings the first user to a invite form that he/she can fill to send invitations to play in the current Geo-Seek session hosted by the user. The initial user is referred to as the Host. The Host is also the "seeker" in Geo-Seek, the player responsible for finding all of his/her friends hidden across the map.

Users (Invites)

Android users that are available to play Geo-Seek must have Geo-Seek installed on their device before playing in a session. A valid invitation game code can be received without having Geo-Seek installed, as game (Geo-Seek session) codes are sent via SMS. Users that accept an invitation from a Host are registered in a Geo-Seek session and their initial coordinates are mapped for their Host to seek. The maximum number of Invites a Host can have in a session is five.

System Administrators

In order to maintain the database of Geo-Seek sessions, which collects data/time the game was initiated, checks the state of the game (Active, Inactive, Suspended), and the set of geo-coordinates that is collected from Users as a game is being played, system administrators have to ensure that tables in the database are available and queries between the database are accurate.
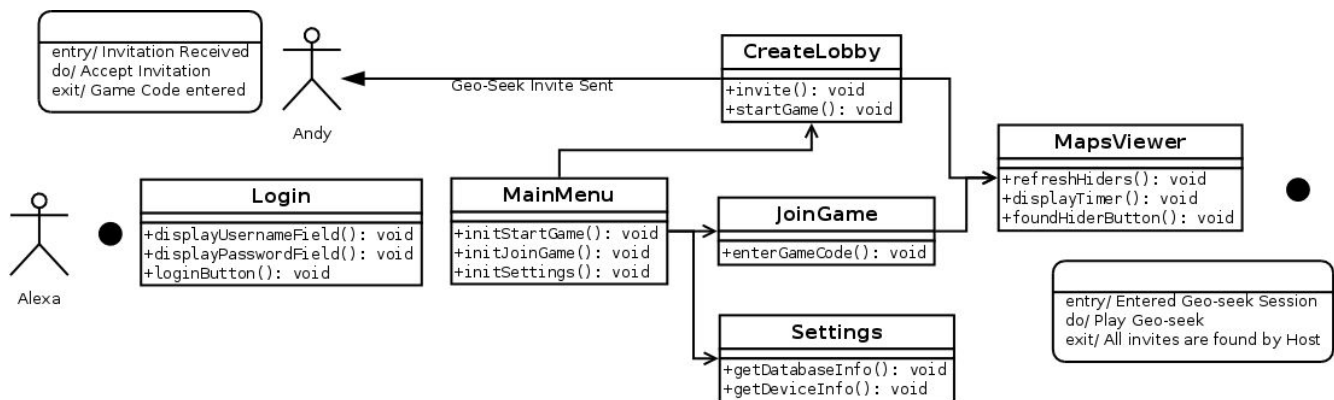
Figure 1. Typical Game Session of Geo-Seek. A user logs into Geo-Seek with his/her username/password in order to "host" a Geo-Seek session. The CreateLobby screen allows you to send a unique game code to your registered friends via SMS to join your game. Once a game has started, the host has a limited time to find all of the players he/she invited using the MapsViewer interface, a maps implementation powered by Google Maps. The winning condition is when the host as found all the hiders in the session.

HostingGame

Initiated by Alexa LaMontagne;
Joined by Andy Santiago, Bryan Bradley, Jonathan Green

Flow of events
1. Alexa, who plays the dual-role of software developer and user, downloads Geo-Seek on the Google Play Store. In order to use Geo-Seek, she registers an account with a unique username and password.
   - The Geo-Seek database creates a tuple of Alexa's account, using her phone number as a key.
2. Alexa navigates the Geo-Seek main menu and selects "Create New Game". This brings her to a list screen that allows her to send invites to registered Geo-Seek users.
   - The Geo-Seek client app queries the Geo-Seek database for users who are able to join a session and returns a list of available users to the CreateLobby activity.
3. Alexa sends invites to play Geo-Seek to Andy, Bryan, and Jonathan. Each invite joins the Geo-Seek session hosted by Alexa by logging into GeoSeek with their username and password and selecting "Join Game".
   - Each invited user receives a unique game code (a randomized 4-character string) via SMS. The game code along with the registered users that accept the game invitation in "Join Game" are entered into the Game Session table of the database.

4. Once invited users have joined the game with their game codes, Alexa is brought to the MapsViewer screen that gives her a Google Maps window with the approximate locations of Andy, Bryan, and Jonathan pinned on the map.
   ○ At the beginning of the game session, all current GPS coordinates of all player devices are sent to the database and queried by Alexa's phone for the initial MapsViewer map view, giving her both 1) her current location, and 2) the approximate locations of the other players.
5. After a period of time had elapsed, Alexa found Bryan. By Alexa and Bryan pressing the "Found" button in the UI, Alexa has found one of three of the players and has to find the other two to win Geo-Seek.
   ○ When Alexa presses "Found" in close proximity to Bryan, the current geocoordinates are checked against the stored location on the Geo-Seek database.
   ○ Once Bryan is found, Andy and Jonathan's locations are queried and an updated map is generated for Alexa.
6. Alexa finds Andy and Jonathan, and the Geo-Seek game session ends when all invited players are found.

Figure 2. Geo-Seek HostingGame use case. In this example, a Geo-Seek user invites her fellow co-developers to a game of Geo-Seek with the Android app, registers the game, and uses the Geo-Seek system to play.

Database Entities

GameSession
❏ A Geo-Seek game session composed of a Seeker and more than one Hider.

Hider
❏ A Geo-Seek User that has been registered in a Geo-Seek session that has to hide from the host of the Geo-Seek GameSession.

Seeker
❏ A Geo-Seek User that is the host of a Geo-Seek session. This User is timed, has a limited number of map "refreshes", and can win or lose.

Device/Phone
❏ The Android device that Geo-Seek app is installed on.

Locations
❏ Comprised of the geocoordinate pairs, timestamp, and relevant geopositional information that reports the most current position of a User.

User
❏ A Geo-Seek user that is registered to play Geo-Seek and be a Hider or a Seeker in Geo-Seek GameSessions.

Appendix A: Help Content

1. Google Maps APIs for Android:
   a. https://developers.google.com/maps/android/
   b. Geo-Seek uses the API for MapsViewer used by the Seeker in a game of Geo-Seek.
2. Android SDK
   a. https://developer.android.com/index.html
   b. Geo-Seek will be developed as an Android app (API level 19).