**Requirements Document**

**GeoSeek: 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. GeoSeek 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 GeoSeek.

*Operational Setting*

The target platform for GeoSeek is Android (API 19 KitKat).

**Functional Requirements (updated 10/22/2015)**

*Users (Host)*

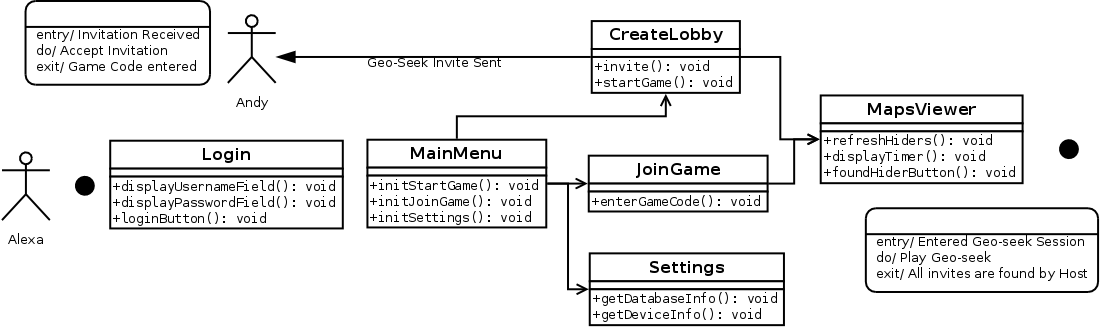
Android users can begin using GeoSeek by downloading it from the Google Play Store. To start a game session, a player clicks “Start Game” which brings the first user to a form to 1) start an “Open Match”, which allow the user to invite GeoSeek individually, a 2) “Play with Guild”, which sets up up a GeoSeek match with a previously created team of GeoSeek Users, or 3) “Create Guild” that builds a new Guild of GeoSeek Users and invites these Users to a GameSession hosted by the User sending the invites. The initial user is referred to as the host. The host is also the “seeker” in GeoSeek, the player responsible for finding all of his/her friends hidden across the map. The current location of the host upon picking options 1), 2), or 3) is saved as the GeoSeek Playground, the arena of a GeoSeek match.

*Users (Invites)*

Android users that are available to play GeoSeek must have GeoSeek installed on their device before playing in a session. A valid invitation game code can be received without having GeoSeek installed, as game (GeoSeek GameSession) codes are sent via SMS. Users that accept an invitation from a host are registered in a GeoSeek GameSession and their initial coordinates are mapped for their host to seek. If the invited Users are members of a Guild, each member needs to accept the invitation to play before the Guild can start a match in a Playground. The maximum number of invitations a host can have in an “Open Match” is four, while a “Play with Guild” can be composed of up to six GeoSeek Users.

*Playground and GeoSeekGameSession*

A GeoSeek Playground is generated at the start of a GameSession that determines the arena of a GeoSeek game. A GameSession is held in a Playground. If a User walks outside of the bounds of the arena all Users are notified. During a GameSession, the host of the match has the approximate coordinates of the invites that he/she needs to “seek”. In order to tag another player, the seeker must take a photograph with their device camera to confirm that an invite, or “hider”, has been found. Photographs are stored in the GeoSeek PhotoBank and are saved with a GameSession match. A GameSession is suspended if 1) the seeker enters a “win” state when he/she has found all the hiders, or 2) the timer of the GameSession has expired.



*Figure 1. Typical Game Session of GeoSeek.*  A user logs into GeoSeek with his/her username/password in order to “host” a GeoSeek 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 as an aid, a maps implementation powered by Google Maps. The winning condition is when the host as found all the hiders in the session. The lose condition is when the GameSession timer expires without the seeker finding all the hiders in the Playground.

***OpenMatch***

***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 GeoSeek User, downloads GeoSeek on the Google Play Store. In order to use GeoSeek, she registers an account with a unique username and password.

*The GeoSeek database creates a tuple of Alexa’s account, using her phone number as a key.*

1. Alexa navigates the GeoSeek main menu and selects “Create New Game”. This brings her to a list screen that allows her to send invites to registered GeoSeek users. She chooses “Open Match” to invite registered GeoSeek Users.

*The GeoSeek client app queries the GeoSeek database for users who are able to join a session and returns a list of available users to the CreateLobby activity.*

1. Alexa sends invites to play GeoSeek to Andy, Bryan, and Jonathan. Each invite joins the GeoSeek GameSession 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 GameSession table.*

1. 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.*

1. After a period of time had elapsed, Alexa found Bryan. By Alexa capturing a photograph of Bryan, Alexa has found one of three of the players and has to find the other two hiders to win GeoSeek.

When Alexa takes a photograph of Bryan, the current geocoordinates are checked against the stored location on the GeoSeek database.

*Once Bryan is found, Andy and Jonathan’s locations are queried and an updated map is generated for Alexa.*

1. Alexa finds Andy and Jonathan, and the GeoSeek game session ends when all invited players are found.

***GeoSeek OpenMatch use case.***In this example, a GeoSeek user invites her fellow co-developers to a game of GeoSeek with the Android app, registers the Open Match (playing without a Guild), and uses the GeoSeek system to play.

***PlayWithGuild***

***Initiated by: Jonathan Green;***

***Joined by: Alexa LaMontagne, Andy Santiago, Bryan Bradley***

***Flow of events:***

1. Jonathan, who previously install GeoSeek and participated in multiple open matches, is ready to build a guild with his co-developers. He logs into GeoSeek with his username and password and navigates to “Create Guild”.
2. In the “Create Guild” lobby, similarly to the list layout of “Open Match”, Jonathan is provided with options to invite GeoSeek Users to join his Guild, along with a text field for giving a name to his new Guild. He invites Alexa, Andy, and Bryan to join his group and names the Guild “GeoSeekers” and checks a field to additional add the invites to a new game (GameSession).

*A new Guild is created with a name and initially composed of one User. For example, a new Guild “GeoSeekers” is stored with one User (Jonathan) and empty game statistics.*

1. Once invites Alexa, Andy, and Bryan accept the Guild membership in “Join Guild”, they are notified that they have become members of “GeoSeekers”. In addition, they are notified of the current game and join to play.

*The “GeoSeekers” Guild game is added to GameSession and game statistics are tracked for the Guild play.*

***GeoSeek PlayWithGuild use case****.* In this example, a GeoSeek user invites his fellow co-developers to join a new GeoSeek Guild named “GeoSeekers”. An option is provided to the Guild creator to start a new match after inviting new members. The Guild is registered at the beginning of GameSession and Guild game statistics are tracked in the Guild table.

**Database Entities (updated 10/22/2015)**

***GameSession***

A GeoSeek GameSession is composed of a start/end time, the name of the Guild if the GameSession is tracked, winner(s)/loser(s), and a GameSession ID (gameSessionID) that functions as the invite to participate in a GeoSeek GameSession between Users.

***Guild***

Constructed of a group of Users who frequently play together and want to play together with up to six players. A Guild tracks GeoSeek game statistics for the Guild Users that play together, gathering information about the name of the Guild (guildName), the total number of GeoSeek games played, the Guild Users that won/lost, the Guild banner, the Guild Leader (the User that created the Guild), and the date the guild was created.

***Playground***

The arena of a GeoSeek GameSession. Determined by a predetermined range around the current location of the host of a GameSession in an “Open Match” automatically. In a “Play with Guild” mode, the option to save a map for later is available. The radius and startPoint are used to determine the field of play.

***Photo***

A table that stores the photos of all “tags” during a GeoSeek GameSession. Each photo contains geographic information, along with data about the time (timeStamp), the size of the photograph, a “tag” identifier, and the location the photo was taken (locationTaken).

***User***

A GeoSeek user that is registered to play GeoSeek and be a hider or a seeker in GeoSeek GameSessions. Users can also be members of Guilds that track Guild game statistics, and have a username, password, email, phoneNumber, and device\_id.

**List of Assumptions (updated 10/22/2015)**

1. All GeoSeek Users have Android smartphones capable with the minimum requirements (running Android 4.4). All Android smartphones used by GeoSeek Users have cameras.
2. GeoSeek Users have smartphones that can capture Photo(s) during GeoSeek gameplay.
3. Some GeoSeek Users will play anonymously (non-Guild) play. All GeoSeek Users capable of anonymous play are able to join a GeoSeek Guild.
4. GeoSeek Users can join more than one Guild.
5. Users can only play in one GameSession (match) at a time.
6. Guild vs. Guild is not supported in the current version of GeoSeek. Guild statistics are tracked based on the results of GeoSeek Users that compete in a GameSession.

**Appendix A: Help Content (updated 10/22/2015)**

1. Google Maps APIs for Android:

<https://developers.google.com/maps/android/>

GeoSeek uses the API for MapsViewer used by the Seeker in a game of GeoSeek.

1. Android SDK

<https://developer.android.com/index.html>

GeoSeek will be developed as an Android 4.4 app (API level 19).

3. Project Github

<https://github.com/allamontagne/GeoSeek>