GeoGuard

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System Test

A. User story 1 from sprint 1: As a user I want a password on the app so that only I can access the application
B. User story 2 from sprint 1: As a user I want to be able to store passwords so that I can recall them later

Scenario First Login:
1. Start GeoGuard App; press "new here?"; type:
   a. username= <username>
   b. password= <password>
   c. confirm password=<password>
   d. press Enter button
   e. user should see creating account dialog and the main screen upon success

Scenario Not First Login:
1. Start GeoGuard App; type:
   a. username= <username>
   b. password= <password>
   c. press Enter button
   d. user should see the main screen upon success

Scenario Store and View Password:
1. Login
2. Press the insert key; type:
   a. password name=<name>
   b. password = <password>
   c. press enter button
   d. user should see confirmation upon successful insert
   e. press back button to get back to main screen
   f. Press passwords button to view password list
      i. press password name to view password

A. User story 1 from sprint 2: As a user I want the data stored on my phone to be encrypted so that I have more security
B. User story 2 from sprint 2:   As a user I want to be able to tag passwords with a location so that they can be recalled later based on my location
C. User story 3 from sprint 2:   As a developer I want a database setup to store passwords so I can better manage accounts

Scenario Tag Passwords with Location:
1. Login
2. Press the insert key; type:
   a. password name=<name>
   b. password = <password>
   c. press tag password checkbox
   d. press enter button
   e. user should see confirmation upon successful insert
   f. press back button to get back to main screen
   g. Press passwords button to view password list
      i. passwords will be divided into two sections: geotagged and not
      ii. press password name to view password

Scenario Setup Database:
1. Go to parse.com
   a. Sign in
      i. username = dkimmelm@ucsc.edu
      ii. ii. password = abc123ez!
   b. Click GeoGuard
   c. Click Core located at the top of the screen
   d. Click users to view all user info

A. User story 1 from sprint 3: As a user I want Push notification when I arrive at a location so I know that I have an available password
B. User story 2 from sprint 3: As a user I want a passwords displayed dynamically based on my location
C. User story 3 from sprint 3: As a user I want a home base that allows me access to all my passwords regardless if they are tagged to a location or not
D. User story 4 from sprint 3: As a user I want to access my profile on other devices to access my data
E. User story 5 from sprint 3: As a user I want a sign out feature for security
F. User story 6 from sprint 3: As a user I want a settings menu where I can set location granularity, change password, change username, set the homebase

Scenario Push Notifications:
- Note: Automated Push Notifications, in correspondence to GPS tracking, will not work on Emulator, as current coordinates and tagged coordinates will use Android Location Services via Network Provider and GPS.

1. [On Physical Device] To test notification background service:
   a. Install application initially (skip step if application is already installed and device has not yet been rebooted)
   b. Open Application and login, if account has already been created
      i. If account has not been created, refer to Scenario First Login
   c. Navigate to Settings, click "Set Search Radius", select preferred radius
   d. Go back, with the Android physical device's back button
   e. Click on "Insert," and type in name and password, check the tag password checkbox (this insert password tagged with geolocation into the local database)
      i. Refer to Scenario Tag Passwords with Location
   f. <u>Reboot</u> the physical device, if it has not yet been rebooted anytime after initial installation
   g. (GPS must be enabled for this application) Wait up to minute for GPS to load initial coordinates
   h. If user is within the radius of the set tagged password in step (e), notification will pop up with icon "Geo"
      i. Open Notification bar, click on GeoGuard's notification, which will delete the notification and take user to the Password database
2. Test Notification cancellation when user leaves radius area, continue from step 1 (h)
   a. When within radius, android device will display notification text
   b. Leave the set radius from the tagged password in step (e), with an additional 10 meters for assurance (as GPS and Network providers location accuracy can be off by a bit)
   c. Wait up to half a minute to see notification disappear
3. To see notification reappear, continue from step 2 (c)
   a. Go back within the radius limit of the geotagged password, move at least 5 meters from current position to be sure
   b. Notification will reappear

Note: Notification for a certain geotagged password will only appear once. It will disappear when (a) the user clicks the notification, or (b) the user has left the radius of the geotagged password. The notification for the geotagged password will only appear again if user leave radius of geotagged password and returns. This assures user is not continuously pestered by notification of same geotagged password.

Scenario Dynamically Displayed Passwords based on Location:
1. Open app, Login
2. Press the insert button; type:
    a. password name=<name>
    b. password = <password>
    c. press tag password checkbox
    d. press enter button
    e. user should see confirmation upon successful insert
    f. press back button to get back to main screen
    g. Press passwords button to view password list
        i. passwords will be divided into two sections: geotagged and not
        ii. move a ways away and some tagged locations will disappear when screen is reloaded
        iii. press password name to view password

Scenario View Home Base
1. Set up homebase
2. Return to homebase location
3. Click homebase button to view homebase screen
    a. all password names are listed
    b. press a password name to access delete and copy functions

Scenario View Profile on another device
1. Login
    a. profile is now updated

Scenario Sign Out:
1. Login
2. Press Settings button
3. Press Logout button
4. User is brought to login screen on success

Scenario Settings Menu
1. Set Password
    a. Login
    b. Press the settings button
    a. press change password button
    b. a popup should appear with field to enter new password and confirmation
        i. press enter button

          ii. popup will disappear on success
2. Set Username
    a. Login
    b. Press the settings button
    c. press change username button
    d. a popup should appear with field to enter new name
          i. press enter button
          ii. popup will disappear on success
3. Set Search Radius
    a. Login
    b. Press the settings button
    e. press change search radius
    f. a popup should appear with 3 buttons with three values
          i. press button
          ii. user should see a notification on success
4. Set Homebase
    a. Login
    b. Press the settings button
    g. press set homebase
    h. a popup should appear with a button reading "set home base here"
          i. press button
          ii. user should see a notification on success

Unit Tests:

	SIGN UP	
Field	**Input**	**Result**
Back Button	Phones back button	Returns to Sign In Screen
Username	empty	username type warning, doesn't try to login
Username	alphanumeric < 3	username type warning, doesn't try to login
Username	alphanumeric username > 31	username type warning, doesn't try to login
Username	non alphanumeric username < 3	username type warning, doesn't try to login
Username	non alphanumeric > 31	username type warning, doesn't try to login
Password	empty	password type warning, doesn't try to login
Password	alphanumeric < 3	password type warning, doesn't try to login
Password	alphanumeric username > 31	password type warning, doesn't try to login
Password	non alphanumeric username < 3	password type warning, doesn't try to login
Password	non alphanumeric > 31	password type warning, doesn't try to login
Password	valid password w/ invalid username type	gives username type warning, doesn't try to login
Confirm	empty	password must match warning, doesn't try to login
Confirm	not matching password	password must match warning, doesn't try to login
Network	valid fields without internet connection	no internet warning, doesn't create profile
Network	invalid username without internet connection	username type warning, doesn't try to login
Network	invalid password without internet connection	password type warning, doesn't try to login
Network	mismatch confirm without internet connection	password must match warning, doesn't try to login
Username	username from another account	tries to login, username taken warning
All	valid fields w/ network connect	creates profile, launches main screen
Rotation	rotate phone with auto rotate enabled	fields rotated; enter button blocked

Repeatability	Login after a logout	works as intended

	SIGN IN	
Field	**Input**	**Result**
Back Button	Click Phone's back button	Opens previous application
Username	empty	username type warning, doesn't try to login
Username	alphanumeric < 3	username type warning, doesn't try to login
Username	alphanumeric username > 31	username type warning, doesn't try to login
Username	non alphanumeric username < 3	username type warning, doesn't try to login
Username	non alphanumeric > 31	username type warning, doesn't try to login
Password	empty	password type warning, doesn't try to login
Password	alphanumeric < 3	password type warning, doesn't try to login
Password	alphanumeric username > 31	password type warning, doesn't try to login
Password	non alphanumeric username < 3	password type warning, doesn't try to login
Password	non alphanumeric > 31	password type warning, doesn't try to login
Password	valid password w/ invalid username type	gives username type warning, doesn't try to login
Sign Up	Click New Here with network	Launches Sign Up Screen
Sign Up	Click New Here without network	no internet warning
Network	invalid username without internet connection	username type warning, doesn't try to login
Network	invalid password without internet connection	password type warning, doesn't try to login
Network	valid fields without internet connection different profile from previous signin	no internet warning, doesn't try to login
Network	valid fields without internet connection same profile from previous signin	signs in, launches main screen
All	valid fields without internet connection same profile from previous signin	quick signs in, launches main screen doesn't update profile
All	valid fields without internet connection	signs in, launches main screen

	different profile from previous signin	updates profile
Rotation	rotate phone with auto rotate enabled	fields rotated; enter button blocked
Repeatability	Sign up after a logout	works as intended

	MAIN SCREEN	
Field	**Input**	**Result**
Back Button	Click Phone's back button	Opens previous application, does not go back to Sign in or Sign up
Settings Button	Click Settings Button	Opens Settings Page
Passwords Button	Click Passwords Button	Opens Passwords Page
Insert Button	Click Insert Button	Opens Insert Page
Homebase Button	Click Homebase Button with homebase set and in location	Opens Homebase page
Homebase Button	When homebase not set	homebase button is gone
Homebase Button	when homebase set and not at homebase	homebase button is gone
Homebase Button	when homebase set and at homebase turn off network	homebase stays in same state
Homebase Button	when homebase set and at homebase with network	homebase stays in same state
Homebase Button	after logging out/in with homebase set and with network	homebase button appears
Rotation	rotate phone with auto rotate enabled	fields rotated

	Settings	
Field	**Input**	**Result**
Back Button	Click Phone's back button	Opens Main Screen
Change Username Button	Click Change Username with network	Opens Change Username Popup

Change Username Button	Click Change Username without network	Network connect warning
Change Password Button	Click Change Password with network	Opens Change Password Popup
Change Password Button	Click Change Password without network	Network connect warning
Change Search Radius Button	Click Change Search Radius with network	Opens Change Search Radius Popup
Change Search Radius Button	Click Change Password without network	Network connect warning
Set Homebase Button	Click Homebase Button with network	Opens Homebase popup
Set Homebase Button	Click Set Homebase without network	Network connect warning
Logout Button	Click Logout Button	returns user to sign in screen
Rotation	rotate phone with auto rotate enabled	fields rotated; enter button blocked

	Change Username Popup	
Field	**Input**	**Result**
Back Button	Click Phone's back button	Return to Settings Screen
Username	empty	username type warning
Username	alphanumeric < 3	username type warning
Username	alphanumeric username > 31	username type warning
Username	non alphanumeric username < 3	username type warning
Username	non alphanumeric > 31	username type warning
Username	same as another account with network	username taken warning
Username	same as another account without network	nothing
Username	valid with network	popup closes
null	click outside popup	popup closes

Rotation	rotate phone with auto rotate enabled	popup closes

	Change Password Popup	
Field	**Input**	**Result**
Back Button	Click Phone's back button	Return to Settings Screen
Password	empty	Password type warning
Password	alphanumeric < 3	Password type warning
Password	alphanumeric username > 31	Password type warning
Password	non alphanumeric username < 3	Password type warning
Password	non alphanumeric > 31	Password type warning
Confirm	not equal to password	mismatch warning
Password	valid without network	popup closes, network warning
Username	valid with network	popup closes, password saved notification
null	click outside popup	popup closes
Rotation	rotate phone with auto rotate enabled	popup closes

	Change Search Radius Popup	
Field	**Input**	**Result**
Back Button	Click Phone's back button	Return to Settings Screen
15m Button	Click button with network	popup closes, radius is set
15m Button	Click button without network	popup closes, network warning
30m Button	Click button with network	popup closes, radius is set
30m Button	Click button without network	popup closes, network warning
30m Button	Click button with network	popup closes, radius is set
30m Button	Click button without network	popup closes, network warning
null	click outside popup	popup closes
Rotation	rotate phone with auto rotate enabled	popup closes

	Set Homebase Popup	
Field	**Input**	**Result**
Back Button	Click Phone's back button	Return to Settings Screen
Set Homebase Button	Click button with network	popup closes, homebase is set notification
Set Homebase Button	Click button without network	popup closes, network warning
null	click outside popup	popup closes
Rotation	rotate phone with auto rotate enabled	popup closes

	Insert	
Field	**Input**	**Result**
Back Button	Click Phone's back button	Opens Main Screen
password name	any string	valid
password	any string	valid
Save Location Box	press box when unchecked	box checked
Save Location Box	press box when checked	box unchecked
Enter Button	press button with box checked	password entered with location notification
Enter Button	press button with box unchecked	password entered notification
Enter Button	press button with box checked without network	password entered with location notification (password only locally saved)
Enter Button	press button with box unchecked without network	password entered notification (password only locally saved)
Rotation	rotate phone with auto rotate enabled	fields rotated

	Passwords	

Field	Input	Result
Back Button	Click Phone's back button	Opens Main Screen
Reload Button	Click reload button with no network	no change (geotagged should disappear)
Reload Button	Click reload button with network	no change
Reload Button	Click reload button exiting location	geotagged disappear
Reload Button	Click reload button entering location	
Non-Geotagged Password Button	Click password button which has text equal to password name	Password popup is displayed
Non-Geotagged Password Button	Click password button which has text equal to password name (No network)	Password popup with data from local cache displayed
Geotagged Password Button	Phone's GPS is not activated	Geotagged password buttons do not appear
Geotagged Password Button	Click password button which has text equal to password name (No network)	Geotagged passwords within radius from current location and from local cache are displayed
Geotagged Password Button	Click password button which has text equal to password name	Local cache is updated from online database and geotagged passwords within radius from current location are displayed
Scroll	Scroll list of buttons on one of the two password sections	List of buttons will scroll down
Rotation	rotate phone with auto rotate enabled	fields rotate, passwords on bottom blocked

	HOMEBASE	
Field	Input	Result
Back Button	Click Phone's back button	Opens Main Screen
Non-Geotagged Password Button	Click password button which has text equal to password name	Password popup is displayed
Non-Geotagged Password Button	Click password button which has text equal to password name (No network)	Password popup with data from local cache displayed
Geotagged	Phone's GPS is not activated	Geotagged password buttons do not appear

Password Button		
Geotagged Password Button	Click password button which has text equal to password name (No network)	Geotagged passwords within radius from current location and from local cache are displayed
Geotagged Password Button	Click password button which has text equal to password name	Local cache is updated from online database and if current location is within radius of home base, display all geotagged passwords
Scroll	Scroll list of buttons on one of the two password sections	List of buttons will scroll down
Rotation	rotate phone with auto rotate enabled	fields rotate, passwords on bottom blocked

	PASSWORD POPUP	
Field	**Input**	**Result**
Back Button	Click Phone's back button	popup closes
remove	click remove with network	password removed notification
remove	click remove without network	password removed notification (deletion not stored on online database)
copy	click copy	selected password is copied to the phone's clipboard
close	press close	popup closes
null	click outside popup	popup closes
Rotation	rotate phone with auto rotate enabled	popup closes

Encryption:
Tested in code
1) Wrote file using for loop
   a) tested value of 1 line to value of 100 lines
2) First Encrypted and Decrypted in same file
   a) first tried hard coded password to encrypt
   b) then used password plus randomly generated salt
   c) finally used user password plus salt
3) Then Encrypted in sign in and decrypted in sign out.
   a) file i/o in on create for ease of testing

b) testing in separate files ensured key could be repeatedly generated

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Push Notifications [Internal Code Testing]

Assuring background service initiates upon booting up device

- Note: Background service begins by having the device calling the broadcast receiver, NotifyReceiver class, which calls the service, NotifyService class, in OnCreate method
  a. Added log statement in service's OnCreate method
  b. Installed application, rebooted device
  c. Output in Android Monitor: Log statement outputted once, which confirms starting background service for the application is started

To reboot via Android emulator
  a. Navigate to where the Android SDK is, by default it is located at C:\Users\<pcname>\AppData\Local\Android\sdk\platform-tools (PC Device)
  b. Type: adb shell stop [Enter], adb shell start [Enter]

Assuring background service runs on boot for GPS tracking and notification for radius from local database's geotagged password

  a. Set time interval constant REPEAT in AlarmReceiver class set to set off alarm calling NotifyReceiver every 5 seconds
  b. Add log statement in NotifyReceiver class
  c. Install application, rebooted device
  d. Output in Android Monitor: Log statement outputs in Android terminal around every 5 seconds, which confirms that the broadcast receiver calls service method in intervals

Assuring Notifications appear when device is within range of geotagged password

  a. Added toast statement, which displays text on android screen, with current coordinates, meters from database's geotagged locations, and set radius from settings
  b. Inserted geotagged password in Database via "Insert" button
  c. Kept device in same location
  d. Installed application, rebooted device
  e. Observed toast statements
      i. Notification issued when within radius of geotagged password
      ii. Moved out of radius set; meters > radius set → notification cancelled
      iii. Moved into radius set; meters <= radius set → notification re-issued

Assuring all geotagged passwords are queried

  a. Inputted toast statement to appear on screen for each geotagged password in local database, multiple geotagged passwords in close proximity were inserted
  b. Inputted log statement, in NotifyService, to display all geotagged passwords checked in gpsCheck method
  c. Output: Android monitor displayed all passwords going through the check and toast statement displayed all geotagged password queried in database of tagged passwords