Senior Project

The Android Powwow Invitation Application

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Introduction
Since the emergence of the cellular handheld device there has been a desire for individuals across the globe to become connected to one another with the single touch of a button. With the incorporation of wireless technology into these devices, smart-phones are able to connect individuals via voice calls or sending and receiving textual, video, or picture messages. With the increase in mobile network speeds as well as the advancement in the technological abilities of these mobile devices, users are able to conquer more and more obstacles with their devices. Because many mobile network providers limit the amount of minutes per month a subscriber may use, numerous users are shifting their conversations to a textual based style of communication. According to CNN, over one third of Americans prefer to communicate through mobile text messaging rather than through voice calls [1]. Being able to send short, straight to the point messages without the hassle of trying to reach an individual via a phone call has taken precedence in our society.

Powwow is an application that allows the user to invite his or her phonebook contacts to a geographical location of their choosing. Powwow was created in order to allow individuals to send a simple invitation in quick and efficient way, which was more favorable than sending an individual text message or a group text message. Through the simplicity of Powwow, users are able to see a list of all their upcoming Powwow invitations and can swiftly create a new invitation in five easy steps. Powwow is designed to be an application that will be able to provide a hassle-free and convenient way for friends, families, classmates and peers to organize a meeting place for any type of agenda.

This paper provides you with an overview of the functionality Powwow has to offer with a brief step-by-step user guide to the application. Also, the paper will go over the Android API class hierarchy that was designed and implemented specifically for this application as well as a look at how certain classes connect and interact with the MySQL database. This paper will also address some of the similar applications already released to the Android Marketplace and how they
compare and contrast to Powwow. In conclusion, I will discuss some of the future implementation goals I have for Powwow and how they will help to assist the user.

**Powwow User Guide**

*Initial start-up screen*

After initially launching the Powwow from your Android’s application list the user will be greeted with a list of their current Powwow invitations in a brief format (*only displaying invitation title and date*) as seen below in *Figure 1*.

![PowWow User Guide](image)

*Figure 1*

*Viewing details about a specific invitation*

The user can view additional information about a specific invitation by tapping on the desired invitation’s cell. This will cause the invitation to expand, allowing the user to view information about the events location, time, and additional details noted by the creator (*Figure 2*). If the user wishes to view the guests of a specific invitation he would tap the image with the globe. Once tapped, the user will be displayed a list of invited guests with either a red (*Not Attending*), yellow (*Possibly Attending*), or green (*Attending*) indicator to the right of their name (*Figure 3*).
Deleting an invitation

In order for the user to delete an invitation, he must tap and hold on an invitation’s cell and he will be presented with a context menu popup as shown in Figure 4. The user then must tap the Remove option from the menu in order for the invitation to be deleted. If an invitation is deleted by the creator of that invitation, then the event is considered cancelled and is removed from the event list of all guests. If an invitation is deleted by a guest, his name will no longer show up on the RSVP list for that particular invitation.
Creating a new invitation
In order for the user to create a new invitation he must first tap on the phone’s menu button to bring up the settings menu, as shown in Figure 5. Once the user taps the New Invitation option he will be taken to the New Invitation Setup screen depicted in Figure 6. From here the user must complete five simple steps in order for the invitation to be successfully added into the database.

1. The user must enter an invitation title by tapping on the designated text field and using the keyboard to enter in a title that is less than 180 characters.
2. The user must select a starting date for the event by tapping the icon that resembles a calendar. After tapping this icon the user will be presented with a Date Picker dialog that allows them to select their desired start date.

![Figure 8](image1)

3. The user must select a starting time for the event by tapping the icon that resembles a clock. After tapping this icon the user will be presented with a Time Picker dialog that allows them to select their desired start time.

![Figure 9](image2)

![Figure 10](image3)

![Figure 11](image4)
4. The user must select a location for the event by tapping the icon that resembles a globe. After tapping this icon the user will be presented with a map displaying their current location as shown in Figure 12. From here the user can double-tap on any point on the map to mark the location of their event. The user will then be presented with a Toast Notification confirming their location, along with a pin drop on the map (Figure 13). After selecting their location, the user must push enter or the back button to return to the New Invitation screen.

![Figure 12](image1.png)  
![Figure 13](image2.png)

5. The user must select the contacts they wish to invite to the event by tapping the icon that resembles a human figure. After tapping this icon, the user will be presented with a Contact CheckBox Chooser that allows them to select the contacts they wish to invite to the event. After selecting their guests, the user must push enter or the back button to return to the New Invitation Screen.
6. *(This step is optional)* Lastly, the user can specify any additional details he would want to convey to all guests of this event.
**The Settings menu**
The user can access the settings menu by pressing the **Menu Button** on their current Android device. After pressing this button, a settings menu will pop up from the bottom of the screen. From this menu, the user can toggle their GPS feature on/off and exit the application.

![Settings Menu](image)

*Figure 18*

**Code Design and Implementation**

**Implementation**
The targeted android development environment is Android 2.2+. The reason I choose this development environment is because I have an older Android phone that runs on this version of Android OS which allowed me to test my application on an actual cellular device. Also, since Android is now on version 3.3 of its OS it is always beneficial to gear an application for earlier Android generations to allow for backward compatibility. Android’s API is based off of Java so all the libraries I used where either innate to Android or Java which gave me an extended base of APIs. The main APIs used for the development of this application are: Google Maps, Location Manager, HTTP POST, Date / Time Formatter, and Contacts Manager. In order to copy my application to my Android device I used the Eclipse IDE which allowed me to transfer my application directly to my phone via USB port.
Main Class Hierarchies
The following figure shows the four main Android classes used in the Powwow application and how they relate to one another.

Powwow.java
This is the main activity class that handles the initial start-up of the application. It calls all necessary functions to query the local database and uses the returned data (ArrayList<Invitation>) to populate the user’s list of current invitations. This class also handles the rendering of the Settings Menu and starts the appropriate activity based off of the user’s menu selection.

GuestInformation.java
This class designates the mandatory information that a guest must contain. The class has the following instance variables and type to hold the guest’s information: firstName (String), lastName (String), Email (String), RSVP (Integer), and phoneNumber (String). All of these instance variables have appropriate getter and setter methods to allow the user to access and modify the content.

Invitation.java
This class designates the mandatory information required in order for a Powwow Invitation to exist. The class has the following instance variables and type that must be inputted by the user
when creating a new invitation: longitude (Double), latitude (Double), title (String), date (String), time (String), invitationID (Integer), invitationList (ArrayList<GuestInformation>), and details (String). All of these instance variables have appropriate getter and setter methods to allow the user to access and modify the content.

**Database Design**

In order to interact with the database the Android application creates an HTTP POST request to a designated PHP file which in turn queries the local MySQL database for the appropriate data. This data is returned in JSON format to the Android application’s calling class, which in turn parses the data for use within the application. *Figure 20* shows a simple diagram of how the Android device interacts with the MySQL database through a PHP script. Also, at the end of this section there is a diagram of the database tables and how they relate to one another depicted in *Figure 21*.

![HTTP POST Diagram](image)

*Figure 20 [5]*

When Powwow wishes to interact with the MySQL database it calls the various methods in the **PowwowDBHelper.java** class. Depending on the method signature, the java class will attempt to send an HTTP POST request to a specific PHP file residing on the server which in turn sends the appropriate
MySQL query to the database. The following is a list of the main methods with an explanation of their function:

- **getAllInvitations()** – This method queries the database for all invitations associated with a specific user’s phone number and returns an ArrayList<Invitation>.
- **getUserInfo()** – Given a user’s phone number, this method queries the database for their information (phone number, first name, last name, email, and RSVP).
- **insertInvitation()** – Once a user has populated all appropriate fields in the New Invitation Dialog, this method is called to push the information to the database.

### Related Android Applications

**Summary of related applications already available on the Android marketplace**

**Group SMS Invite Android Application [2]**

This application is almost identical to Powwow which makes it one of the top competitors. It allows the user to invite one’s contacts by their mobile phone number and it will send them a text message invitation regardless if they have installed the application or not. Another advantage is that the user can send a reply message of yes/no/maybe to the application and it will use that as an RSVP; which allows individuals without the application to be able to RSVP to an event. One of the disadvantages of this application that Powwow hopes to remedy is when the user selects a location. The user is forced to enter the exact location of the event in a TextField which can result in error or misspellings.

**Friends Events Android Application [3]**
Friends Events is basically a social network that makes it easier to stay in touch and connect with your friends. Friends Events let you to create an event, invite friends that are close to the events and set event location on a map. The interface was really simple and consisted of three tabs that allowed the user to see their current events they created, any incoming events, and lastly a help tab. When testing the application I noticed that when trying to choose a location the My Location feature would never pinpoint my exact location, but was always about a ½ mile off. Also, it was extremely hard to set a location because while trying to scroll through Google maps to set your location it would mark your event location with one tap. There was also an input field to set the event radius but it was never specified what units (meters, miles, feet) it was in. Although the interface was simple it was mostly textual based and lacked much aesthetics.

Meet Friends Android Application [4]
This application allows the user to organize meetings with his or her friends to a mutual geographical location by identifying them with their email address. This application will also display a list of public events around the user’s current geographical location that they can attend. In each meeting invitation you are able to include images, audio, and textual messages. One disadvantage to this application is that you must sign-up with a valid e-mail address, and only after confirming your e-mail addresses are you able to use the application. Also, the main UI of the application is a little cluttered when a user has numerous invitations. One advantage that Meet Friends offers that I would like to use in Powwow is the ability to create public events that any of the user’s contacts, having the application, can view and attend.

Future Functionality and Features
Because of time constrains while designing and implementing this application, I wasn’t able to include all of my ideas into the first stage of Powwow. The following is a list of some of the ideas I plan on implementing in Powwow’s future:

- Ability to authenticate with Powwow via Facebook Login
- Create a screen for New User Signup
- Integrate Facebook Check-in option
- Application will send text message to all guest that do not have Powwow downloaded on their Android devices
• Ability to use Google Maps Search in order to find locations, cross streets, and any type of potential meeting place when choosing a location for a new invitation
• Ability to filter through contacts alphabetically with a scroller when choosing guests for a new invitation
• Transfer my local MySQL database to a secure, public MySQL database
• Create an acceptable application icon and other custom graphics

Conclusion
As I initially stated, there is a need for this type of application in today’s Android marketplace. The applications in the current market come close to providing all the necessary functionality that user’s need but after reviewing the top three applications they don’t appear to suffice. All three applications provide their own advantages and disadvantages which I will use when designing the remaining functionality of Powwow. After releasing Powwow to the world, users everywhere will be able to easily invite their peers to a mutual location, quickly view who is in invited and their reply, and lastly provide the flexibility to reach users with or without the Powwow application installed.

Works Cited
2. https://market.android.com/details?id=com.geckointeractive.invitewiz&feature=search_result#?t=W251bGwsMSwyLDEsImNvbS5nZWNrb2ludGVyYW5nZWdyYWdlLmNvbS5jbi91c2VyL3RoaXRsZS8yMjAxMDU4NGU4ZjM3MzAzMzc0NjNhMGM2M2I5N2VlOGYwOGQ3MmZiL29sb2d5bW9vdWJsZS92YWluL3Byb2R1Y3Rpb24uanBn
4. https://market.android.com/details?id=com.noveideje.sastanak.android&feature=also_installed#?t=W251bGwsMSwyLDEwNCwiY29tLm5vdmVpZGVqZS5zYXN0YW55b25lcnNpb24uanBn