Detailed Design Document
Voluntold
Volunteer Networking Application

Prepared by: Gianluca Bastia, Arunn Chanthirakanthan, David Hudson, Nicholas Perkins, Brian Wolf

Table of Contents

1. Introduction

Voluntold was created to facilitate volunteer event discovery and involvement. Increasing event awareness will help strengthen communities, by providing more accessibility to local events and opportunities to work with others toward a common goal.

The application will utilize a back-end web service to handle database requests and requests for user authentication; the front end of the application will be built as a web app, and will make use of bootstrap for cross-platform functionality (to support both desktop and mobile web browsers). The web app was chosen as the primary launch platform because of its versatility--a web app is portable across a wide range of devices, from iOS devices to Windows desktops. The wide reach of the Internet will help our application, and volunteer events, reach as many people as possible.

The back-end will be hosted on a cloud, and be inaccessible to the user. A REST interface will be used to connect this back-end to the user interface, or front-end, of the application. The back-end will be created and tested on a local machine; once the product is acceptable, the back-end will be expanded to utilize Google App Engine or Amazon's Web Service.

The application works by prompting users to log in with an existing account; users without an account may utilize the create account function to, as expected, create a new account. Following successful login, the user will be directed to the events page. This page will display events within a user-specified range. Events, by default, will be sorted by date. Clicking on an event will allow the user to see additional event details, and will allow the user to sign up for the event as a volunteer. We hope to incorporate social media sharing for events as well, media such as Facebook or Twitter. The top portion of the website will contain a title bar, containing a set of 3 radio buttons--these buttons will allow a user to sort events by location, or date.

The application will also have a create event page, allowing the user to create a new event by filling in a form; the form will contain a name, location, date, and start time. A manage events tab will allow the user to see events they have created and events they have signed up for. From here, the user can also delete an event of their own, or rescind their sign-up for an event.

A user account page allows users to manage account information, including home address, email address and other personal information. Users will also be able to permanently delete their account from this page.

2. Technologies

REST (Representational State Transfer) - REST is a back-end architectural style that is often used in Web development. REST is good for internet use, as well as mobile applications, because it lacks the need for bandwidth.

MySql - MySql is an open source relational database management system. MySql is currently owned by Oracle corporation. Most of Mysql is run via the command line. Mysql is a high level language allowing easy integration into the backend.

Google Maps API - Google Maps API is a popular mapping API that allows a programmer to utilize Google Maps functionality. It provides a wide host of services that will be fundamental to the application. Functions such as data visualization and directions will provide helpful navigation to events, as well as location services to search for events within a given a given mile radius. The primary use of the Google Maps API involves geocoding, using an address to retrieve a location's latitude and longitude coordinates.

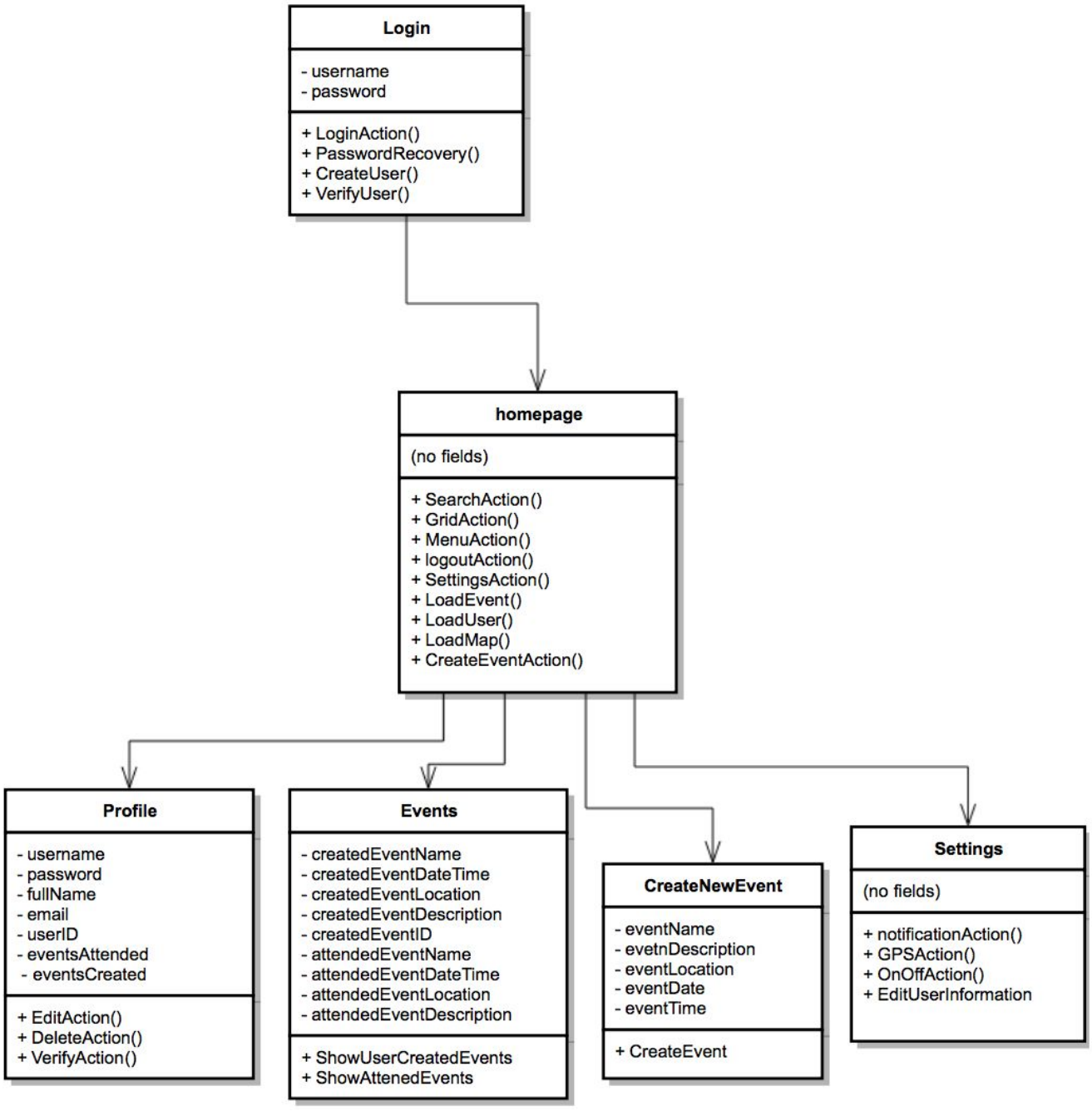
Social Media API's - We hope to use social media API's such as Twitter and Facebook to allow users to post volunteer events to their profiles. These commonly used publically used API's also rely on REST services

Amazon AWS- The use of Amazon AWS to host our server is something we hope to be able to accomplish before the end of the semester. Amazon AWS has over 70 services available to developers and can be used to host a server virtually at amazon's facility. This makes hosting easy, as Amazon provides all hardware and maintenance, with commendable uptime.

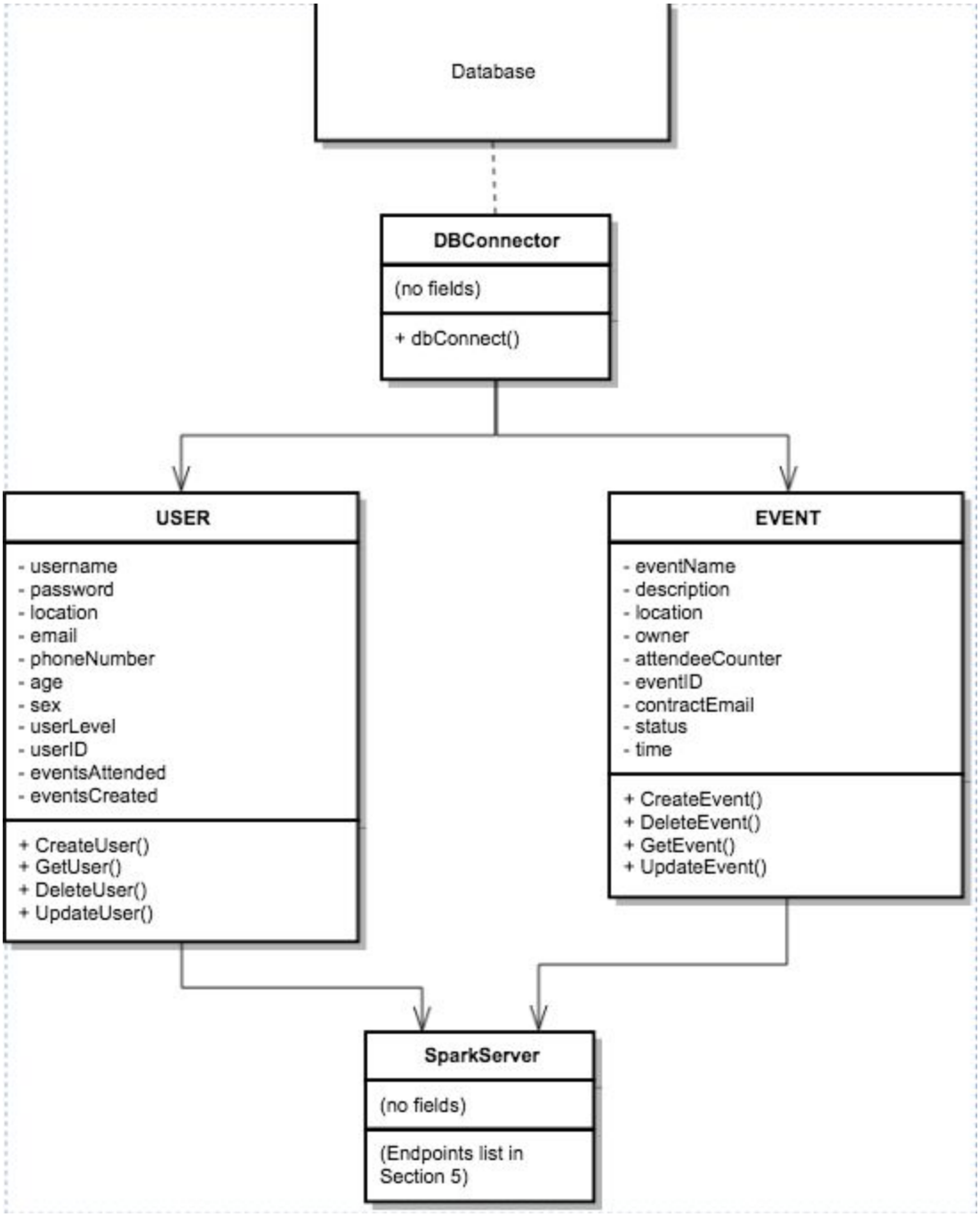
Bootstrap - Bootstrap is a very popular HTML, CSS, and JS framework for developing responsive programs on the web. Bootstrap will be instrumental in front-end web development. It will also scale the web app to fit on a wide range of devices, while only requiring a single code base.

3. Module Design

a. Front-end



b. Back-end

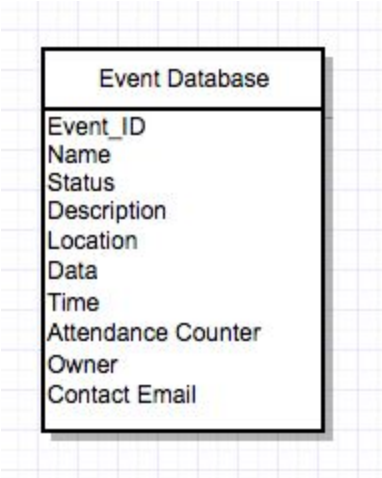

Database
DBConnector
(no fields)
+ dbConnect()
USER
- username
- password
- location
- email
- phoneNumber
- age
- sex
- userLevel
- userID
- eventsAttended
- eventsCreated
+ CreateUser()
+ GetUser()
+ DeleteUser()
+ UpdateUser()
EVENT
- eventName
- description
- location
- owner
- attendeeCounter
- eventID
- contractEmail
- status
- time
+ CreateEvent()
+ DeleteEvent()
+ GetEvent()
+ UpdateEvent()
SparkServer
(no fields)
(Endpoints list in Section 5)

4. Database Design

Voluntold uses one database with multiple tables to hold different types of information. Event information is stored in an event table, while user data is stored in its own user table.

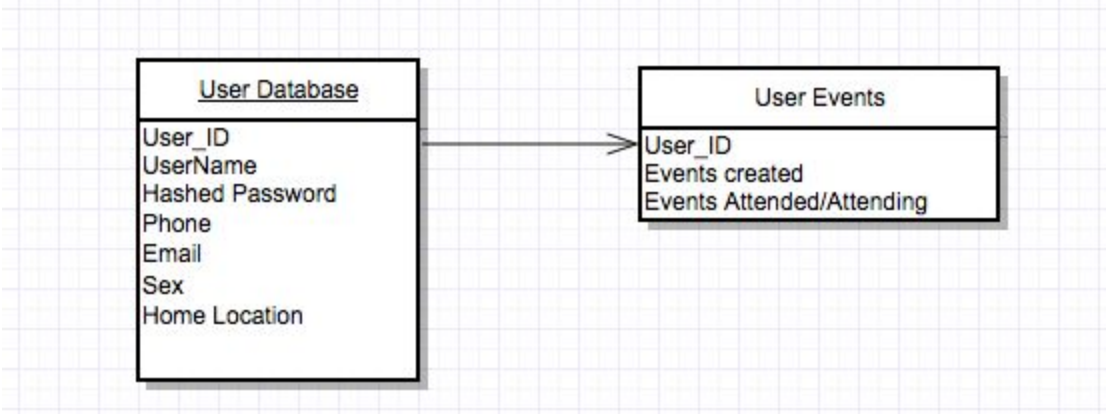
Event Table

Contains information about events that are being held, will contain all pertinent information from event name, location, owner, etc.



User Table

Will contain usernames for all users, will also contain hashed passwords for users and will be used for authentication. This database will contain information such as email, phone, and user level for all users.



5. Rest Endpoints

Login Page

- Login
  - -Get- User/username/Password
- Create user
  - -Post- User/username/Password/Email/Location/Age/Phone

Homepage

- Search (Location)
  - -Get- Events/Search/location/
- Search (Name)
  - -Get- Events/Search/name/
- Search (Date)
  - -Get- Events/Search/date/
- Search
  - -Get- Events/Search/date/location/name

Profile

- Retrieve user information
  - -Get- User/username/location/email/eventsAttended/eventsCreated
- Change user password
  - -Put- User/password/username/NewPassword

Create Event

- Make new event
  - -Post- Events/name/description/location/owner/time/contactemail
- Retrieve event id from database
  - -Get- Events/EventID/name/location/owner/EventID
  - -Put- User/username/eventsCreated

Event View

- View event details
  - -Get- Events/name/description/location/owner/time/contactemail/eventID
- Volunteer (Event signup)
  - -Put- User/username/eventsAttended
  - -Put- Events/EventID/attendenceCounter

6. Proof of Concept

To promote familiarity with the necessary technologies, we designed proof of our concept. This proof of concept will help minimize the learning curve for new tools and technologies during the development phase.

Our proof of concept demonstrates the use of spark server and mysql. We made a simple database in mysql called names that holds the first and last names of people. Using a database connector, the database was connected to our Maven project. Utilizing the tools imported from spark, we created a simple endpoint that returns all the names from the database in the JSON format. The data was parsed to JSON using Google's GSON library.

The proof of concept can be found online at
https://github.com/perkins109/Senior-Proj-Volunteer-/tree/master/Rest-Test

7. Test Plan

Login Page

Logging In
Authenticates users based on predefined username and password combinations.

Case	Expected Result
Both Fields Empty/Not Found	Invalid user/pass
Username Empty/Not Found	Invalid user/pass
Password Empty/Not Found	Invalid user/pass
Valid Info Entered (both fields)	Authentication Successful

Recovering Password
Sends the user a link to reset their password.

Case	Expected Result
User field Empty/Not Found	User Not Found
Valid User	Sends reset link to user email

Creating User
Creates a new account in the database.

Case	Expected Result
Empty data fields	Missing data field
Any/all fields contain invalid data	Prompts user to enter requisite info
Filled data fields w/ valid data	Account creation successful

Home Page

Allows users to search for nearby events, edit their profile or settings, and logout.

Case	Expected Result
Search Function data entry	Return results based on search parameters
Log out	Logs user out

Profile

Contains user information, can be edited by the user.

Case	Expected Result
Necessary fields filled	Updates database with new data from user
Empty Fields (any)	Prompts user to enter all info

Create Event

Creates a new event in the database with time and location information.

Case	Expected Result
Required field(s) empty	Prompts user to enter requisite info
Any/all fields contain invalid data	Prompts user to enter requisite info
All fields filled appropriately	Creates new event in DB