CONNActiv

Software Requirements Specifications

Last Revision Date: 12/10/11

1.0 Product Overview and Summary

ConnActiv is a social network meant to connect people who participate in physical activities. Its goal is to allow users to meet other people in an area based on a mutual interest in sports, running, hiking, etc. Users will be able to subscribe to different activities based on their interest (e.g. a running “activity”). Each activity feeds into its own public stream containing posts that mention or "tag" the activity, as well as any other relevant updates. The stream is able to be seen in a user's “Home” view if he or she is subscribed to the particular activity. This public stream is intended for users to post what activity they are doing and when. This allows other users to join them if the original user allows invitations to his or her posts.

For example, Jon posts the following message on the site’s “Running” section: “Hey, going out for a run in Oakland at 9AM.” If Jon has allowed it, Stacy may ask to join Jon in running that day.

Finally, users may give other users recommendations after they have done an activity together. This gives other users an opportunity to see if the user in question would be a suitable activity partner; however, because this could potentially lead to cyber bullying in the form of malicious reviews users are limited to one review per activity with the person in question.

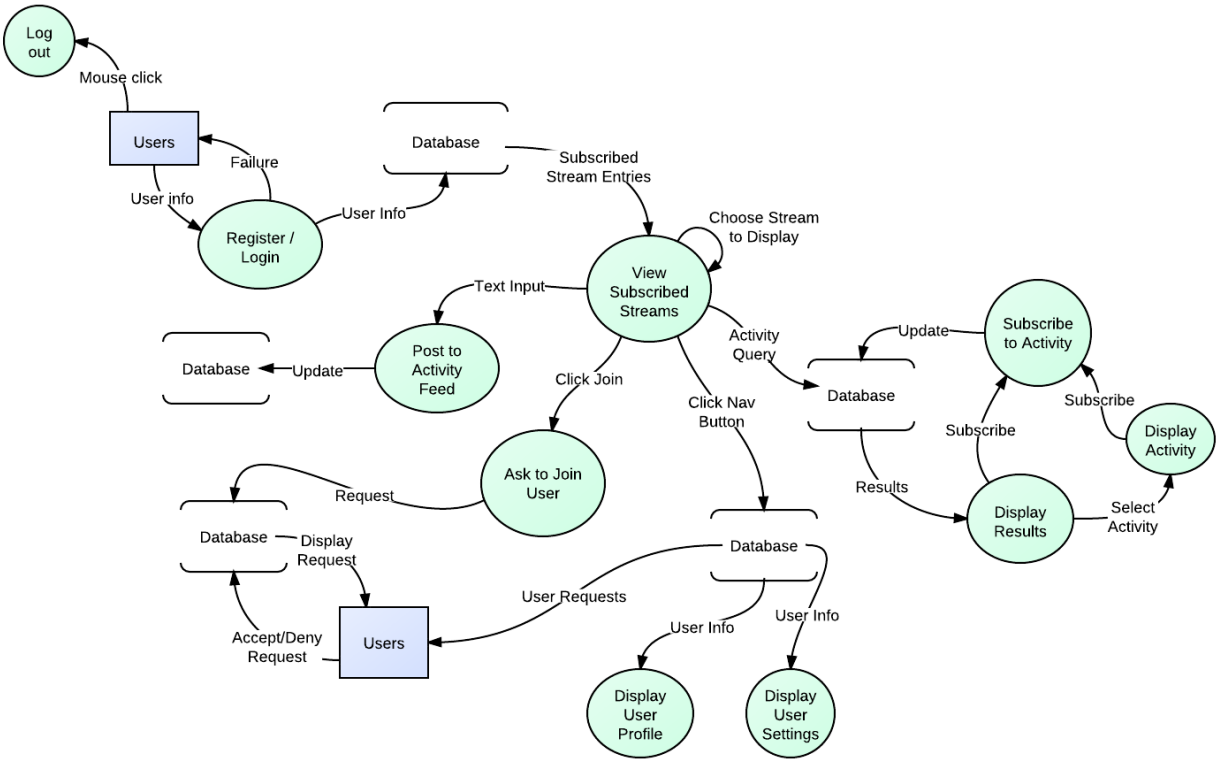
2.0 Information Description

2.1 User Interface

See ‘User Interface’ section in binder.

2.2 High-level Data Flow Diagram

See next page.


Log out
Mouse click
Users
Failure
User info
Register / Login
User Info
Database
Subscribed Stream Entries
Choose Stream to Display
View Subscribed Streams
Text Input
Post to Activity Feed
Database
Update
Click Join
Ask to Join User
Request
Database
Display Request
Users
Accept/Deny Request
Click Nav Button
Database
User Requests
User Info
User Info
Display User Profile
Display User Settings
Activity Query
Database
Update
Subscribe to Activity
Subscribe
Display Activity
Subscribe
Results
Display Results
Select Activity

2.3 Data Structure Representation

User

Attribute	Data Type	Description
USER_ID	INTEGER NOT NULL PK	
FIRST_NAME	STRING	
LAST_NAME	STRING	
STREET	STRING	
CITY	STRING	
STATE	CHAR(2)	
ZIP	INTEGER	
PHONE	CHAR(12)	
INTERESTS	CLOB	
PROFILE_PIC	STRING	
EMAIL	STRING	
DOB	DATE	
GENDER	CHAR(1)	

Networks

Attribute	Data Type	Descriptions
NETWORK_ID	INTEGER NOT NULL PK	
AREA	STRING	--CITY,LOCALE
ACTIVITY	INTEGER	--FK INTO ACTIVITIES

User_Networks

Attribute	Data Type	Descriptions
USER_ID	INTEGER NOT NULL	
NETWORK_ID	INTEGER_ID	

Activities

Attribute	Data Type	Descriptions
ACTIVITY_ID	INTEGER NOT NULL PK	
ACTIVITY_NAME	STRING NOT NULL UNIQUE	
DESCRIPTION	CLOB	

User_Activities

Attribute	Data Type	Descriptions
USER_ID	INTEGER NOT NULL PK	--USER_ID and ACTIVITY_ID = pk
ACTIVITY_ID	INTEGER NOT NULL	
LOW_LEVEL	INTEGER NOT NULL	
HIGH_LEVEL	INTEGER NOT NULL	
PREFERRED	INTEGER NOT NULL	
OWN_LEVEL	INTEGER NOT NULL	

Favorites

Attribute	Data Type	Descriptions
USER_ID	INTEGER NOT NULL	
NETWORK_ID	INTEGER NOT NULL	

Connactions

Attribute	Data Type	Descriptions
CONNACTION_ID	INTEGER NOT NULL PK	AUTO_INCEMENT
POST_TIME	DATE	
USER_ID	INT	
LOCATION	STRING	
START_TIME	DATE	
MESSAGE	STRING	
END_TIME	DATE	
UNIQUE_NETWORK_ID	INTEGER	
IS_PRIVATE	INTEGER	

Connaction_Attending

Attribute	Data Type	Descriptions
CONNACTION_ID	INTEGER NOT NULL	--CONNACTION_ID and USER_ID = pk
USER_ID	INTEGER NOT NULL	

Reviews

Attribute	Data Type	Descriptions
USER_ID	INTEGER	

FROM_USER	INTEGER
IS_ANONYMOUS	INTEGER
CONNACTION_ID	INTEGER UNIQUE FK- ONLY ONE REVIEW PER CONNACTION
IS_POSITIVE	INTEGER
REVIEW_DATE	DATE
REVIEW	CLOB

Requests

Attribute	Data Type	Descriptions
FROM_USER	INTEGER NOT NULL	
TO_USER	INTEGER NOT NULL	
CONNACTION_ID	INTEGER	
MESSAGE	CLOB	
APPROVED	INTEGER	
DATE	DATE	
HIDDEN_FOR_FROM	INTEGER	
HIDDEN_FOR_TO	INTEGER	

Friends

Attribute	Data Type	Descriptions
USER_ID	INTEGER NOT NULL	
FRIEND_ID	INTEGER NOT NULL	

Messages

Attribute	Data Type	Descriptions
FROM_USER	INTEGER NOT NULL	
TO_USER	INTEGER NOT NULL	
SUBJECT	STRING	
BODY	CLOB	
DATE	DATE	

Events

Attribute	Data Type	Descriptions
EVENT_ID	INTEGER NOT NULL	
USER_ID	INTEGER	
NAME	STRING	
UNIQUE_NETWORK_ID	INTEGER	
MESSAGE	STRING	
START	DATE	
END	DATE	
LOCATION	STRING	
RECURRENCE	STRING	
APPROVED	INTEGER	
REQUEST_DATE	DATE	

Event_Atendees

Attribute	Data Type	Descriptions
EVENT_ID	INTEGER NOT NULL	
USER_ID	INTEGER NOT NULL	

2.4 Data Elements Dictionary

Elements	Description
USER_ID	Unique User ID
FIRST_NAME	User first name
LAST_NAME	User last name
STREET	User street address
CITY	User city
STATE	User state
ZIP	User zip
PHONE	User phone number
INTERESTS	Where the user's interests will be stored
PROFILE_PIC	Integer into pictures table
NETWORK_ID	Integer uniquely identifying the network

AREA	Network area locale
ACTIVITY_ID	ID Number into activity table
ACTIVITY_NAME	Name of an activity
DESCRIPTION	Description of the activity
LOW_LEVEL	Low skill level that a user will accept
HIGH_LEVEL	High skill level that a user will accept
CONNACTION_ID	Unique ID number identifying a connaction
LOCATION	Location that a connaction will take place
START_TIME	Date/Time that a connaction will start
END_TIME	Date/Time that a connaction will end
TH_U/D	Thumbs up or down on a recommendation
REVIEW_DATE	Date the recommendation was submitted
REVIEW	Comments on the recommendations
COMMENT_ID	Unique ID that maps to comments table
FROM_USER	User ID that sent comment/request
TO_USER	User ID that receives comment/request
MESSAGE	Message that is included with requests
FRIEND_ID	User ID of a user's friends
SUBJECT	Subject of a message
BODY	Body of a message
DATE	Date message was sent
SECURITY_TYPE	Level of security a user wishes to have on their profile
PICTURE_ID	Unique ID given to a picture a user uploads
PICTURE_LINK	File path to the picture
COMMENT	Text that is the comment a user leaves
COMMENT_DATE	Date a comment was left
SUBSCRIPTION_ID	Unique ID that identifies a user's subscription
RECURRENCE	Date interval an event may recur at

3.0 Functional Description

3.1 Functions

IC Card IC Name: unsubscribe

Description: Unsubscribe the user from an activity
Interaction Pattern:

By Myself with Interaction

Time Critical Condition: None
Name of Other IC: Database
Message to Other IC: delete activity id from subscription list
Other IC's Task: delete activity id from subscription list
Card 1 of 1 (If necessary please use several IC cards to describe an IC)

IC Card IC Name: post_activity

Description: User types a String status update. Tags the post based on location/network, activity so that it shows up in appropriate news feeds. Options to make private/public. Options to accept/preview default values for the items tagged or override by specifying o
Interaction Pattern:

By Myself with Interaction

Time Critical Condition: None
Name of Other IC: Database
Message to Other IC: write info
Other IC's Task: write info received
Card 1 of 1 (If necessary please use several IC cards to describe an IC)

IC Card IC Name: ask_to_join

Description: Upon seeing an activity in his news feed that is marked as "open," a user can join the event--ie ask to tag along/respond to the status. If the poster of the status accepts the tag along request (is this a good name for it? Perhaps should be discussed),
Interaction Pattern:

Quiet State

Time Critical Condition: None
Name of Other IC: Database
Message to Other IC: Write request
Other IC's Task: Write request
Card 1 of 1 (If necessary please use several IC cards to describe an IC)

IC Card IC Name: add_to_favorites

Description: A user subscribed to a person/activity/network/group also has the option to "favorite" it. Favorited items will show up in a more visible location (ie sidebar) for the user.
Interaction Pattern:

By Myself with Interaction

Time Critical Condition: None
Name of Other IC: Database
Message to Other IC: Add person/activity/network/group to a favorites table.
Other IC's Task: Write person/activity/network/group to a favorites table.
Card 1 of 1 (If necessary please use several IC cards to describe an IC)

IC Card IC Name: subscribe

Description: If a user comes across the profile of a person/activity/network/group page and he wants to have the person/activity/network/group's posts/updates appear in his news feed, the user can subscribe to the feed of that person/activity/network/group by clicking
Interaction Pattern:

By Myself with Interaction

Time Critical Condition: None
Name of Other IC: Database
Message to Other IC: write activity id to subscription list
Other IC's Task: write activity id to subscription list
Card 1 of 1 (If necessary please use several IC cards to describe an IC)

IC Card IC Name: register_user

Description: Take user-inputted username (String) and password (String) and check against entries in the database. Side note: Ideally, for security, the passwords will need to be salted (can be backburned).
Interaction Pattern:

By Myself with Interaction

Time Critical Condition: None
Name of Other IC: Database
Message to Other IC: Store username, encrypted password
Other IC's Task: Store info
Card 1 of 1 (If necessary please use several IC cards to describe an IC)

IC Card IC Name: search

Description: Ability to search for member profiles
Interaction Pattern:

By Myself no Interaction

Time Critical Condition: none
Name of Other IC: none
Message to Other IC: none
Other IC's Task: none
Card 1 of 1 (If necessary please use several IC cards to describe an IC)

IC Card IC Name: news_feed

Description: Displays the news feed information
Interaction Pattern:

By Myself no Interaction

Time Critical Condition: none
Name of Other IC: none
Message to Other IC: none
Other IC's Task: none
Card 1 of 1 (If necessary please use several IC cards to describe an IC)

IC Card IC Name: secure_login

Description: Allow users to securely log in to profile
Interaction Pattern:

By Myself no Interaction

Time Critical Condition: none
Name of Other IC: User Profile
Message to Other IC: Requests login information
Other IC's Task: Return information
Card 1 of 1 (If necessary please use several IC cards to describe an IC)

IC Card

IC Name: user_profile1

Description: A profile that keeps all of the important information for a user
Interaction Pattern:

Mixed

Time Critical Condition: none
Name of Other IC: market
Message to Other IC: Return requested data
Other IC's Task: Processes requested data
Card 1 of 3 (If necessary please use several IC cards to describe an IC)

IC Card

IC Name: user_profile2

Description: A profile that keeps all of the important information for a user
Interaction Pattern:

By Myself no Interaction

Time Critical Condition: none
Name of Other IC: secure_login
Message to Other IC: Return requested data
Other IC's Task: Processes requested data
Card 2 of 3 (If necessary please use several IC cards to describe an IC)

IC Card

IC Name: user_profile3

Description: A profile that keeps all of the important information for a user
Interaction Pattern:

By Others no Interaction

Time Critical Condition: none
Name of Other IC: privatize_profile
Message to Other IC: none
Other IC's Task: none
Card 3 of 3 (If necessary please use several IC cards to describe an IC)

IC Card IC Name: recommend

Description: A user can review a person/group one time per activity completed together (security measure against spam attacks). Thumbs up/thumbs down option on person/group profile with the option to add additional details
Interaction Pattern:

By Myself with Interaction

Time Critical Condition: None
Name of Other IC: Database
Message to Other IC: put recommendation into database
Other IC's Task: record recommendation
Card 1 of 1 (If necessary please use several IC cards to describe an IC)

IC Card IC Name: view_recommendations

Description: View recommendations made by the user
Interaction Pattern:

Quiet State

Time Critical Condition: None
Name of Other IC: Database
Message to Other IC: Get recommendations
Other IC's Task: Retrieve recommendations
Card 1 of 1 (If necessary please use several IC cards to describe an IC)

3.2 Processing Narrative

Function Name	Details
login	Allow the user to sign into his/her existing account by inputting a string for his/her username and the corresponding password string, hidden as a series of asterisks or dots, and then submitting the information. The user input is passed into the database and checked first to determine if the username is an existing entry (if not, returns false) and then checks if the inputted password matches the stored password for the user. Upon failure, the user is asked to retry his/her credentials. Upon success, the user is logged in and granted access to

	his/her Home page.
logout	Allows the user to exit his/her current session.
sign_up	Allows an individual to register for an account. First, the user submits his/her preferred username (string), which is then sent to the Users table in the database to check for uniqueness. On failure, the user is notified that the username is already taken and asked to select another one. On success, the user is prompted to choose a password that is between six and fifteen characters in length and includes at least one numeric character. The user is also then prompted for additional details: • *Primary email address* (string) – This will be used to confirm the registration as the final step. • *Real name* (string) - The user can choose to use this as his/her public display name within the site or to use his/her selected username, but the real name must remain in the database as a security measure. The user's real name is revealed to connactions (those individuals with whom he/she meets up for activities) to add a measure of security. • *Primary network* (string) – The user can select this from dropdown menu of existing networks (populated from the database), with the option to add a network if his/hers is not in the list. The user can choose whether or not to display this information publicly. • *Gender* (character ["m" or "f"]) – The user can choose whether

or not to display this information publicly.

Once a user has supplied all the information up to this point, he/she is considered "registered," although supplementary information is required to make status updates and collect news feeds. The user may complete these details when he/she first registers or may elect to return to fill in supplemental details later, but for ease of use (ie. in order to enable default values to appear in status updates), the user must supply the following for *each activity* he/she wishes to post about:

- *My skill level – low* (int) – The lower bound of the range for the user's best approximation of his/her own abilities for the activity in question.
- *My skill level – high* (int) – The upper bound of the range for the user's best approximation of his/her own abilities for the activity in question.
- *Preferred skill level – low* (int) – The lower bound of the range of skill levels the user prefers to interact with.
- *Preferred skill level – high* (int) – The upper bound of the range of skill levels the user prefers to interact with.
- *Accepted skill level – low* (int) – The lower bound of the range

	of skill levels the user will accept interacting with. • *Accepted skill level – high* (int) – The upper bound of the range of skill levels the user will accept interacting with. Once these details are filled in for an activity, when the user goes to create a post involving it, the values for skill levels are autocompleted by default, although the user may elect to override them for any instance.
subscribe	Allows a user to receive all updates and activity posts from any activity, network, or group he/she chooses. The user then will see these updates in his/her Home news feed.
unsubscribe	Allows a user to stop receiving updates and activity posts from any activity, network, or group to which he/she was previously subscribed.
approve	A user can review a person or group *one time* per activity completed together. (The limit is a security measure against malicious spam attacks.) At a minimum, a user may recommend the connaction in the form of a thumbs up, which then simply increments the corresponding user/group's recommendations (int) in the database. Thumbs up/down are displayed on the user's profile directly underneath the profile picture so that it is clearly visible. At a more detailed level, a user wishing to recommend a connaction has the option to provide information beyond a simple thumbs up/down—a user can input a supplemental description or critique that is then attached to the connaction in the database. The reviewing user has the option to post the critique anonymously.
disapprove	Similar to the *approve* function, a user may disapprove of the connaction in the form of a thumbs down, which then simply

	increments the corresponding user/group's disapprovals (int) in the database. Thumbs up/down are displayed on the user's profile directly underneath the profile picture so that it is clearly visible. The reviewing user may provide supplemental details/criticisms and he/she has the option to remain anonymous.
post_an_activity	A user may type an activity or status post (string) to be displayed on his/her profile. The post will also be visible in the news feeds of his/her subscribers. The user may tag the post based on the location or *network* it concerns so that it displays in the appropriate subscriber news feeds. Additionally, the user may *tag* the post based on the activity involved. When he/she tags a particular activity, the skill levels he/she specified during registration for the activity will appear in the status, although these may be overridden for any instance (or edited under Settings). A user also can make the post *private* or *public* so that it is limited to particular audiences (Connactions, Buddies, or Networks). The user may also specify that the post is a *recurring* activity or even a *lesson*. Finally, a user may mark the post as "open" or "closed." (Open activity posts mean that the user is looking for or is accepting partners/joiners.) Example of an activity post: *Clark Kent: "Anyone want to play squash tomorrow at 9pm at the Pete?"* *Location: The Pete (Pittsburgh)* *I am a level 5-6 looking for levels 4-8, accepting levels 4-9.* *This activity is open!*

ask_to_join	Upon viewing a desirable activity in his/her news feed that is marked "open," a user may ask to join the activity by responding to the status. The poster of the status has the option to accept the join request; if he/she does accept, the users then become "connacted" and have "connaction" (more than "limited" but less than "buddy") access to each other's profiles and can message one another to discuss and finalize the details of the meet-up.
view_news_feed	Based on the people/networks/groups to which he/she subscribes, the most recent activity updates are drawn from relevant databases and are displayed in his/her Home section. All subscription updates are grouped into the "All" tab and then are also individually sorted in corresponding tabs.
add_to_favorites	A user who subscribes to a person/network/group also has the option to favorite it. Favorited items will show up in a more visible location on the user's Home page and Profile – directly under the user's profile image and name in the sidebar.
view_calendar	A user can view a calendar that features dated activities for all of his/her subscriptions. It is sortable for each tag so the user may select and deselect what types of events are displays

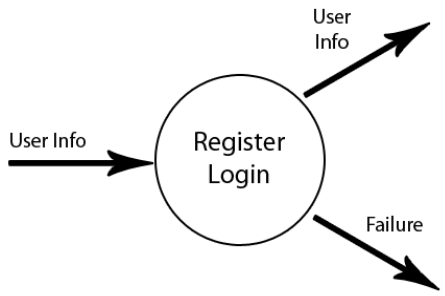
3.3 Design Constraints

Function Name	Details
login	Requires string input for both username and password. Before passing to the database, both inputs are stripped and tested to prevent SQL injections.
logout	No design constraints
sign_up	The username and password must be strings, with the password being between six and fifteen characters in length and containing at least one numeric character. Username and password must not contain special characters other than underscores. Requirements for other necessary details: • *Primary email address* (string) – Must be valid; must contain @ symbol and '.' symbol. • *Real name* (string) – Must not contain special characters. • *Primary network* (string) – If not already in the database, the user must input his/her preferred network. Must not contain special characters. • *Gender* – Must be a single character ["m" or "f"]. Requirements for other supplemental details: • *My skill level – low (*int) – Must be an integer.

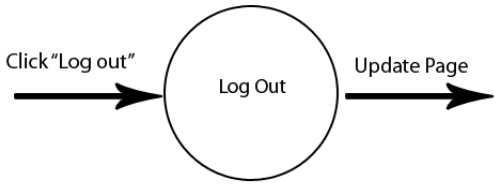
	• *My skill level – high* (int) – Must be an integer than is >= the lower skill level. • *Preferred skill level – low* (int) – Must be an integer. • *Preferred skill level – high* (int) – Must be an integer than is >= the lower skill level. • *Accepted skill level – low* (int) – Must be an integer. • *Accepted skill level – high* (int) – Must be an integer than is >= the lower skill level.
subscribe	A user cannot subscribe to him/herself. A user cannot subscribe to anything to which he/she is already subscribed.
unsubscribe	A user cannot unsubscribe from any person/group/network to which he/she is not already subscribed.
approve	A user can review a person/group exactly *one time* per activity completed together. They must have participated in an activity together.
disapprove	A user can review a person/group exactly *one time* per activity completed together. They must have participated in an activity together.
post_an_activity	Requires string input
ask_to_join	Requires that the corresponding activity is “open” to joiners.
view_news_feed	No design constraints.
add_to_favorites	Requires that the user be subscribed to the person/network/group he/she wishes to favorite.

view_calendar	No design constraints.

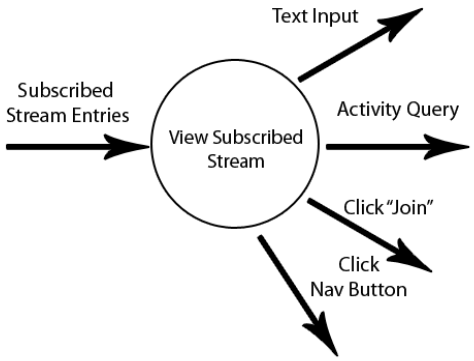
3.4 Detailed Data Flow Diagrams



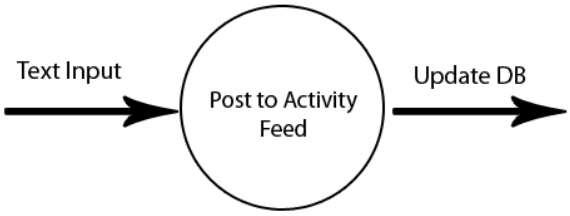
Register / Login



Log out



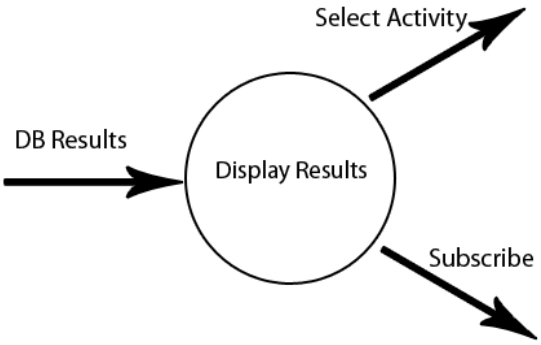
View Subscribed Stream



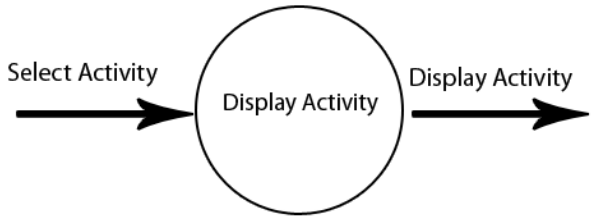
Post to Activity Feed

Ask to Join User

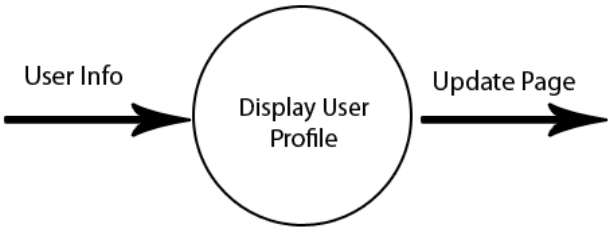
Subscribe to Activity



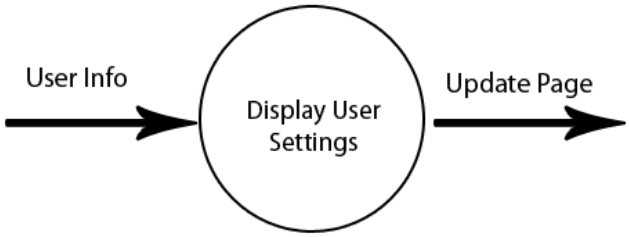
Display Results



Display Activity



Display User Profile



Display User Settings

4.0 Performance Requirements

- Considering each user will have many entries in each supporting table, database storage will be our main performance hurdle. The amount of space that we have for database storage will dictate the number of users that our system can handle.
- The processing speed of our server will dictate the number of concurrent users that we can handle at any given time.
- Our system should initially be able to handle up to 1,000 user profiles and subsequent table entries according to the user's site interaction in the database with up to 100 concurrent users.
- The system should be able to process up to five database queries and display the dynamic page content within five seconds.
- There shouldn't be any issues with storing dynamic information in the database since inserts are rather inexpensive and should happen one at a time.
    - No action or task should take more than five seconds to complete.

5.0 Exception Conditions

User side:

Account creation:

Exception	Handling
User enters an existing account name	Inform user the name is taken
Password is less than 6 characters	Inform user the password is too short

Account logging in:

Exception	Handling
User enters the wrong password	Five chances before a temp lock is issued to prevent account hijacking
User cannot remember password	Email is sent to the registered account with a temporary password

Activities:

Exception	Handling
User's wants to list an activity not supported	User selects other and fills in a field This can be later added to our system

Server side:

All system handle exceptions will comply with W3's RFC2616 HTTP status code standards. This includes returning a 500 error to the client when a system encounters an undefined exception.

6.0 Implementation Priorities

Implementation priorities will follow the schedule outlined in the software plan. The implementation methodology will follow the waterfall model that will allow for a

systematic approach to materializing the designs. In each step, the following step is carefully planned.

Initially, the team will implement the user interface using HTML and CSS followed by the database communication and interaction mechanisms by using PHP for the scripting language and MySQL for databases. If time permits, we will implement an Android application for mobile phones. This will be done as a separate interface after the core of the project is functional.

- Outline of the implementation priorities:
- User Interface Prototype
- User Interface Core Functionality
- PHP Scripts
- Android Application, if time permits
- Deployment

7.0 Foreseeable Modifications and Enhancement

Modifications/Enhancements – User side

- **Increase Activities**
  - Activities are currently limited to physical (sport-like) activities, but this could spread to anything.
- **Add Medal Achievements**
  - As users do more activities, they will start to unlock different medals (Gold, Silver, and Bronze).

Modifications/Enhancements – System side

- **Advanced Code: Make site even easier to navigate**
  - Auto complete fields.
  - AJAX – Convert functions to asynchronous ones.
- **Optimize Code: If time permits, ensure code is as efficient as possible**
  - MySQL, PHP, CSS, jQuery, HTML.

8.0 Acceptance Criteria

Nightly releases of the software will be verified using unit testing or a similar automated test suite.

List of user interface acceptance tests that will be performed:

- End-user usability surveys with feedback forms
- Usability heuristics tests
- Usability specification compliance
- Unit tests
- Compliance to this specification document

List of the integrity tests that will be performed:

- Unit tests
- Compliance to this specification document

9.0 Sources of Information

- GitHub [http://github.com] – The manual pages located on GitHub for our version control system
- Android SDK [http://developer.android.com] – Android SDK information for the Android app
- PHP Manual [http://php.net/manual/en/index.php] – PHP manual pages which will be reference during PHP development
- MySQL Manual [http://php.net/manual/en/book.mysql.php] – MySQL manual which will be referenced for database interaction

- JSON Manual [http://php.net/manual/en/book.json.php] – JSON manual which will be referenced for server-client database communication
- PHPMyAdmin [http://phpmyadmin.net/home_page/index.php] – Information about the database management system we will be using to create initial database requirements

10.0 Revision History

Person	Date Modified	Section	Description
Vince	9/22	1	First draft
Rob	10/3	2.1	First draft
Ray	10/3	3.1	First draft
Dave	10/5	2.3,2.4	First draft
Vince	10/5	2.1	Added Calendar and proofread
Kim	10/5	3.2,3.3	First draft
Vince	10/6	Entire Doc	Assembled all pieces
Ray	10/18	6, 8	First draft
Dave	10/18	5, 9	First draft
Vince	10/19	3.4	First draft
Dave	10/19	4, 9	First draft
Vince	10/19	Entire Doc	Assembled and proofread all pieces
Vince	12/10	Entire Doc	Removed diagrams and fixed database tables to reflect changes