Mobile Application that Increases Happiness for Obesity Patients

Software Requirement Specification

COEN285 Software Engineering (Fall 2014)

Team 3 - Khushali Bhatt, Hinsen Chan, Ashwini Nalage, Benjamin Sorlie

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1. Introduction

1.1 Purpose

This document will present a detailed description of a mobile application designed to increase happiness for obesity patients. It will describe the system features, system interfaces, and constraints. This document is intended for the stakeholders and software developers.

1.2 Scope

The software system detailed by this document is a mobile app intended to increase happiness in obesity patients. The system will be designed to provide tools to assist patients to lose weight. By enabling patients to lose weight, patients will be able to improve their quality of life or happiness.

Specifically, the software system is designed to motivate a user. The software will facilitate communication between users through a match making system designed to match users with like goals and properties. Once matched, users will be able to join activities, health missions or group events and receive rewards through the achievement system. The system also provides notifications to keep the user engaged.

1.3 Definitions, Acronyms, and Abbreviations

Term/Acronym	Definition
GPS	Global Positioning System
Mobile Application	A computer program designed to run on a mobile device
Web Server	A computer system used to distribute information on the world wide web
Notifications	A message or alert given to a user by the software system
Health Missions	An assignment given to or created by the user with a set goal, start and end date.
Exercise Buddy	Another user with similar weight loss goals
Healthy Lifestyle	A lifestyle including diet and exercise habits that promote positive changes in the user
Limitations	A physical or mental factor that prevents the user from participating in any activity
Gym	Any location where users exercise
Diet	The overall type of food that the user habitually eats
Exercise	Activity requiring physical effort with the intent of improving health
Screen name	An anonymous name used to represent the user
Emotional Support	Empathy, concern or encouragement from others
Stakeholder	Any person with an interest in the project who is not a developer.
User	An obesity patient or system administrator

1.4 References

IEEE. IEEE Std 8301998 IEEE Recommended Practice for Software Requirements Specifications. IEEE Computer Society, 1998.

1.5 Overview

This document includes a general description of the software system, specific requirements that developers must meet and analysis models.

2. General Description

This system is designed with the purpose of assisting motivated obesity patients to make dietary and physical changes to their lifestyle through the use of an exercise buddy as emotional support. Although there are other software products that help patients track their diet and exercise routines, none are built with targeting emotional support as a top priority. Based on the ethnographic research conducted for this system, it is suggested that obesity patients already fully understand the potential of living a healthy lifestyle through proper diet and exercise. Most of these patients feel that they have the knowledge to choose the right diet and exercises to improve their health. The difficulty in maintaining a new healthy lifestyle routine is a lack of emotional support from family and friends. Therefore this system focuses on assisting patients with locating an exercise buddy who is either a patient or former patient. By pairing up users with other patients who they can fully identify with, this system helps people who have similar dietary and exercise goals to motivate each other with their lifestyle change.

2.1 Product Perspective
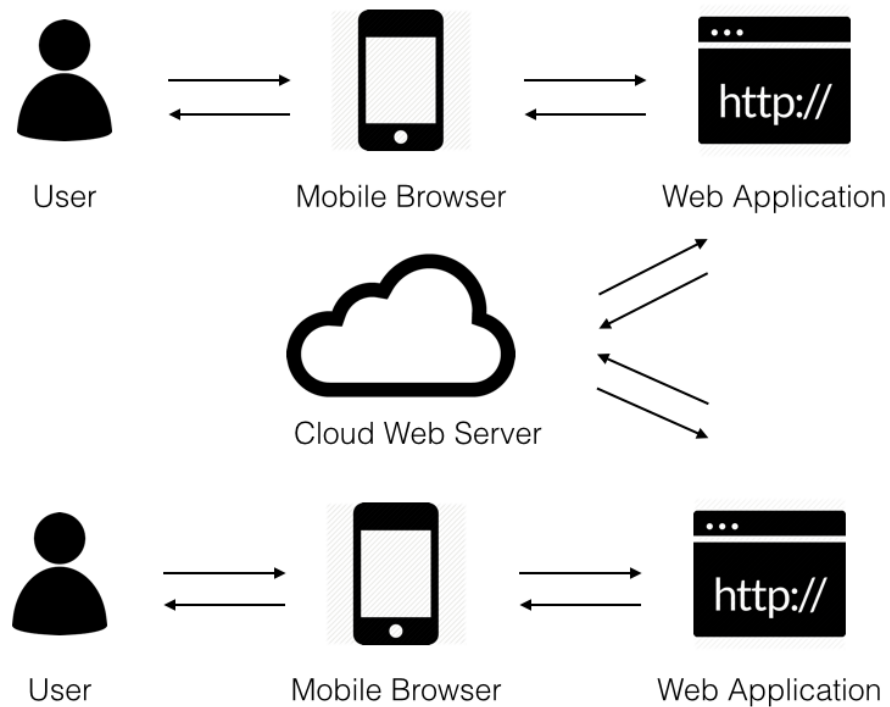
This system consists of a mobile application and a web server. The mobile application is used by the obesity patients to find exercise buddies and events as well as to track their dietary and exercise routines. The web server is used to store user and event data and to manage the system as a whole.

Users shall save, delete, and update their information via the mobile application. The mobile application shall communicate with the web server to store and retrieve data via a mobile phone's web browser as a web application. The web browser shall use the GPS data from the mobile device to access the user's location data. The GPS data returned shall be used to assist users in locating an exercise buddy, find local events, and push and pull notifications from the mobile application. When a user signs on to the application, their location, profile, and health goals shall be

tracked by the web server. It shall be made available for queries by other users to match patients with an exercise buddy.

In addition to finding an exercise buddy, the system shall also be able to push and pull location data to update users with system events. These system events may notify a user that a buddy has joined or left an event. For example, a user shall be notified if a buddy has checked in at a local gym or has signed up for a marathon.

The profile information, event data, and notifications used by the system is stored in the web server. The web server is responsible for saving, deleting, and updating data for the system. All of the interaction performed between users will go through the web server first before it reaches its intended party. Communication overall shall be establish through the internet.

2.2 Product Features

Profile

Each user may create a profile that contains personal information such as a screen name, password, email, start/end weight goals, age, quote, activities, limitations, and gym location. Information from the profile along with location data from the GPS locator will be used to match users with exercise buddies and group events.

Find exercise buddies

The search function allows users to find other obesity patients and invite them as an exercise buddy. The search may be filtered by distance, exercise goals, activities, and/or physical limitations. Results may be returned as pins on the map page or as line items on the list page. When a potential buddy has been located, an invitation may be sent to add the user as a permanent buddy. In addition to finding new buddies, the search function will also show where buddies are if he/she have checked into an event.

Find activities

The search function allows users to find exercise activities and check into and out of it. The search may be filtered by distance, exercise goals, activities, and/or physical limitations. Results may be returned as pins on the map page or as line items on the list page. When an event has been located, users may view its details which shows a short description, points, members checked in list, and buddies checked in list.

Receive notifications

When a special event sponsored or advertised by the system is in the local vicinity, a message will be pushed to notify the user. The message will include a link which allows the user to view the details of the event which contains a description, points, members joined list, and buddies joined list. In addition to events, users will also receive notifications pertaining to their buddies. Information such as points earned, events joined, and activities checked into will be pushed to the user.

Health Missions

Users may add health missions which are weight goals that he/she have set for themselves. There are no set end dates. Users may choose to end the mission when he/she feel comfortable doing so. While the mission is active, users may track their weight and calorie intake each day. Photos may be added to maintain a visual log of the user's progress. Points and achievements may be earned for the mission by accomplishing very tasks and milestones.

Earn motivational rewards

Points and achievements may be earned by the user for accomplishing tasks and milestones during the course of a health mission. Points are used to rank users on a leaderboard with patients who have similar weight reduction goals. The motivational rewards are used to help users monitor their own progress as well as view other users' progress.

Join group events

Group events are system hosted or sponsored events such as marathons, decathlons, themed runs, etc. New group events are pushed to users' notification list. Users may also search for events in their local vicinity. Each event has a profile which displays its description, points rewarded, participating member list, and participating buddies list.

2.3 User Characteristics

There are two types of users who shall interact with this system: administrators and patients. Administrators shall perform upgrades and maintenance for both the web server and mobile application. The patients shall interact with each other using the mobile application while using the web server as the communication hub.

Administrators may add, remove, or update data from the web server. Administrators may add, remove, or update features from the mobile application. Administrators may also add, remove, or update users and events from the system. Administrators shall only interact with the system through the web server.

Patients may add, remove, or update their profile information through the use of the mobile application. This data shall then persist through the web server. Patients may also update their location and status information. Patients may also query and filter for information from the web server to find exercise buddies and group events.

2.4 General Constraints

Since the system relies on the internet as its communication medium, a valid interaction connection must be maintained at all times for the mobile application to function. In addition to an active internet connection, the mobile application relies heavily on GPS location data from the mobile device to connect users and events. If a user is using a device that does not have a GPS locator or have blocked location services in their privacy settings, the system will be unable to utilize this user as an exercise buddy. In addition, it will be unable to track this user's activities.

The web server will be constrained by its storage and network capacity. If the storage is full, users will be unable to add or update data. If the number of users signed into the system outweighs its network capacity, the system may crash or will be forced to deny service requests.

The interface that users interact with is the mobile application. Because the mobile application utilizes the web browser to run, it will be constrained by the technology that is available to modern mobile web browsers and cell phone devices. The mobile application will be limited to utilizing HTML5 and JavaScript as its front-end. On the backend, it will be limited by the server programming language the system resides on. In addition, the physical screen size of the application will be limited to the device of the user.

2.5 Assumptions and Dependencies

An assumption about the system is that it will be used on mobile phones that have GPS location services. If the mobile device does not have a GPS locator or the user has disabled it, the system will be unable to function fully. The user will still be able to utilize the system services, but will be unable to contribute any location data to it. For example, a user without GPS will be able to track their dietary and exercise routines, but he/she will be unable to find an exercise buddy or group event.
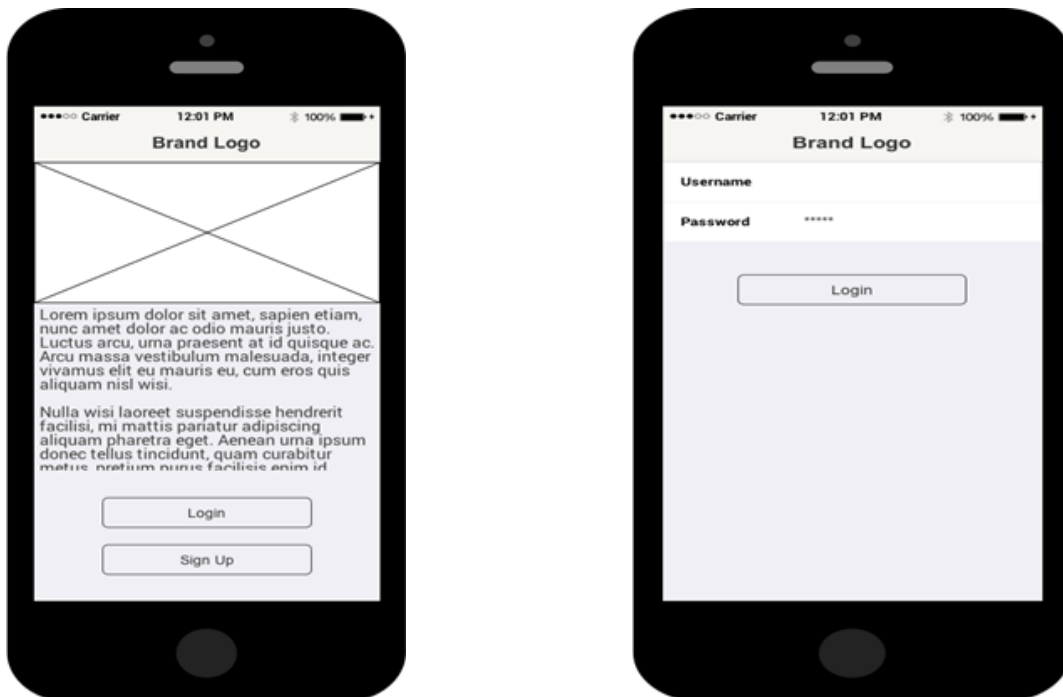
Another assumption is that users of this system are obesity patients who are motivated to make a lifestyle change. If a patient is not already motivated to engage and maintain a healthy lifestyle, this system will not function due to user rejection. Patients must already be knowledgeable and motivated to eat right and exercise properly. This system is used to assist patients in finding emotional support in an effort to assist them in maintaining the routine. If the user is not motivated to diet or exercise at all, this system will not be used by the user at all.

3. Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces
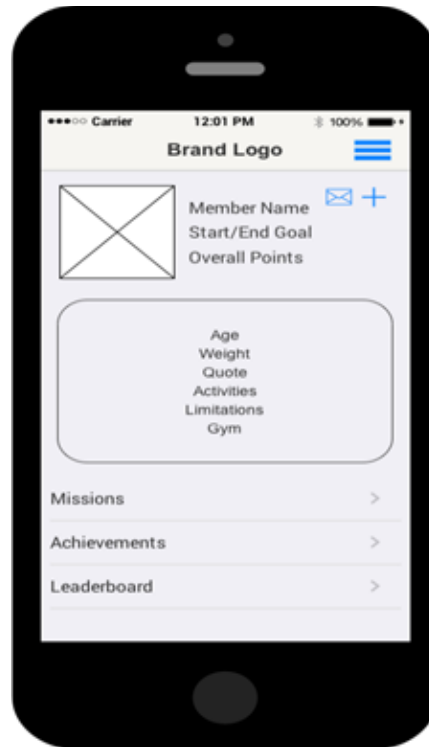
Login

Sign Up

Menu

Find Buddies and Activities
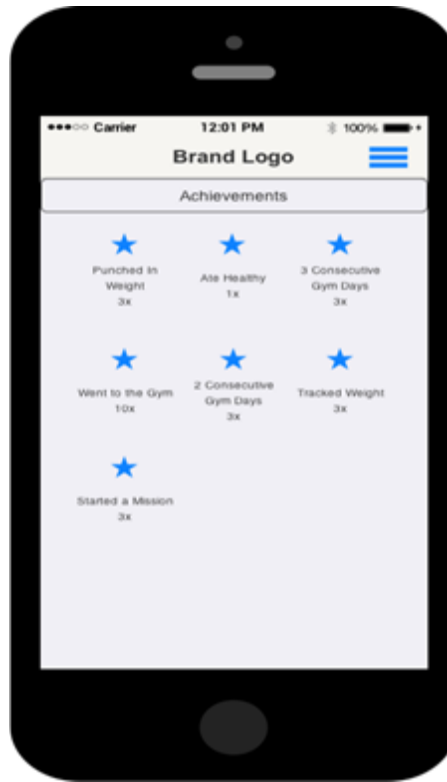

Get Notifications
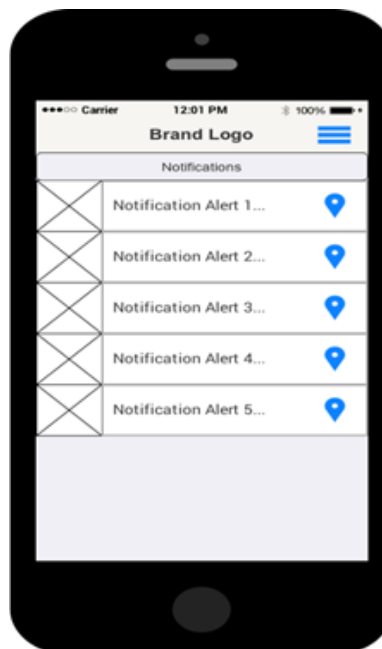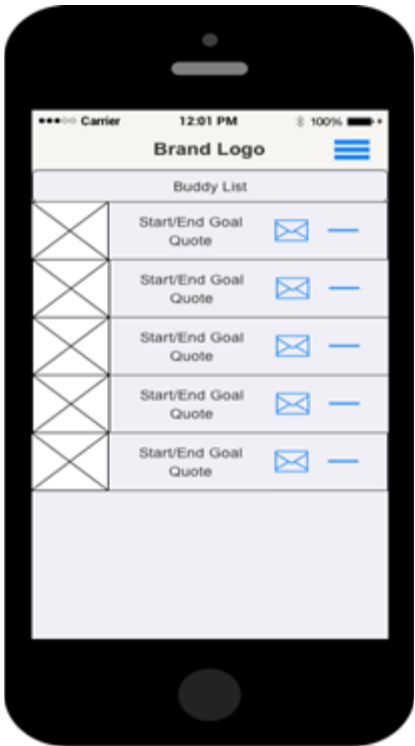
View Profile

Missions List
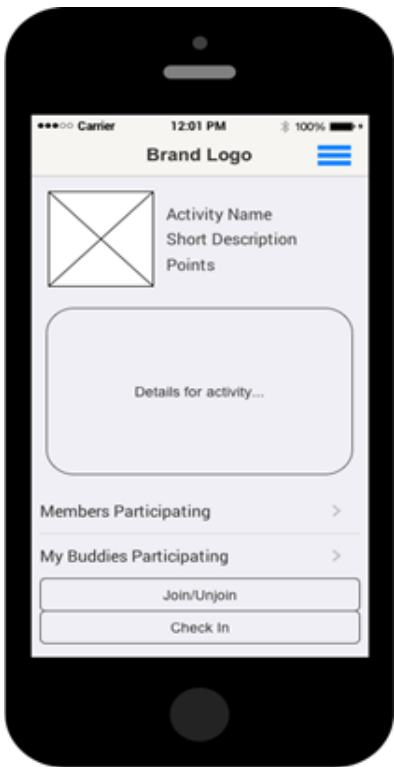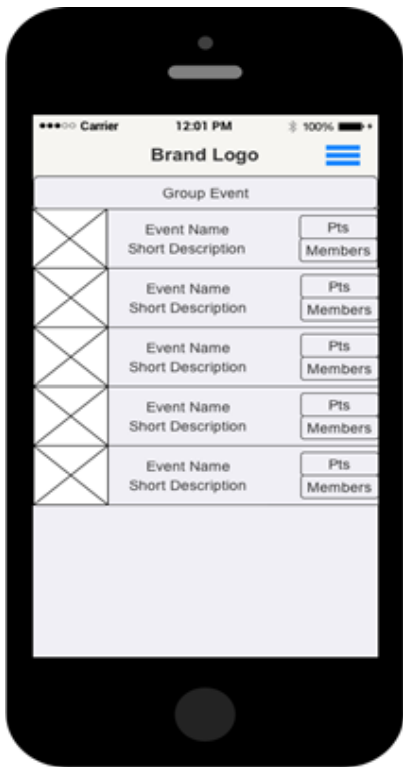
Achievements

Leaderboard

Buddy List

Event List

3.1.2 Hardware interfaces

3.1.2.1 Mobile app shall work on any iPhone 4s or later version of iPhone.

3.1.2.2 Mobile app should be compatible with typical Android mobile phones such as Samsung Galaxy S5, LG G3, HTC One M8 and Sony Xperia Z1.

3.1.2.3 Website should work on any laptop or tablet that can run a modern browser (Firefox 14+, Chrome v39 and IE9+).

3.1.3 Software interfaces

3.1.3.1 The mobile app shall work on IOS7 and IOS8.

3.1.3.2 The android app should work on Android OS 4.3 Jelly Bean or higher.

3.1.3.2 Website should work on all modern web browsers (Firefox 14+, Chrome v39 and   IE9+).

3.2 Functional Requirements

The application shall contain of the following functional requirements:

3.2.1 Login:

i.   System shall be able to accept a login request when provided the user's username and password.

3.2.2 Sign Up:

i.   If user does not have a username, the user shall be able to create a user account.

ii.   To create account user shall be able to enter mandatory information (username, password, current weight, and desired weight)

iii.   The user shall be able to upload a photo either by taking a picture or selecting a picture.

iv.   The user also shall enter additional information (quotes about himself, age, activities, limitations, and gym he is going)

3.2.3 Menu:

i.   After login successfully, system shall pop out a menu
ii. The menu shall show options including find buddies and activities, notifications, profile,buddy list, missions, and events.

3.2.4 Find buddies and activities:

i.   The system shall display a filtered list of buddies, other members and activities when a filter is applied (such as distance, start/end weight goal, activity and physical/diet limitations).
ii. The system shall show members/activities based on search criteria.
iii. The system shall provide an option to send messages
iv. The system shall provide an option to add a friend.

3.2.5 Notifications:

i.   The system shall push notifications to the user.

3.2.6 View Profile:

i.   On the profile screen, The user shall be able to view his name, start/end weight goal, overall points he achieved, age, weight, quote, activities, limitations, gym.
ii. The user shall be able to view his missions, achievements and leaderboard.

3.2.7 View Mission List:

i.   User shall be able to see his start and end weight goal.
ii. User shall be able to enter his today's weight, calories and upload before/after photos.
iii. User shall be able to end his mission.
iv. User shall be able to view his past missions with his start/end goal weight, achievements and before/after photos.

3.2.8 View Achievements:

i. User shall be receive points for different achievements.
ii. The System shall award the user 3x points for punched in weight, 1x points for following healthy diet, 3x points for going 3 consecutive days in gym, 10x points for went to gym, 3x points for 2 consecutive gym days, 3x points for tracked weight and 3x points for starting a mission.

3.2.9 View Leaderboard:

i. User shall be view leaderboard with top member's name, points they collect.
ii. User shall be able to add them.
iii. User shall be able to send a message them.

3.2.10 View Buddy List:

i. User shall be able to see his buddy list with his buddies' start and end goal, their quotes.
ii. User shall be able to send them message.

3.2.11 View Event List:

i. User shall be able to view group event with its name and description
ii. The event list shall display the points he can achieve if he attends and members of the event.
iii. User shall be able to view details about the event activities, members' participation, and his buddies' participation.
iv. User shall be able to join or unjoin the event activity and he shall also be able to check in for the event.
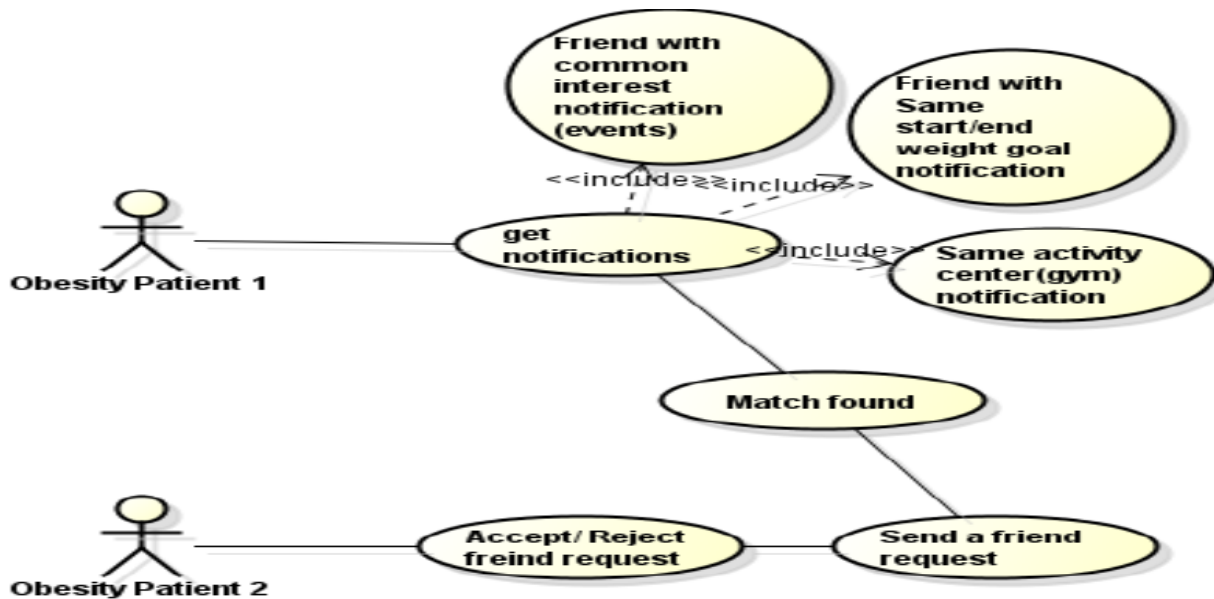
3.3 Use Cases

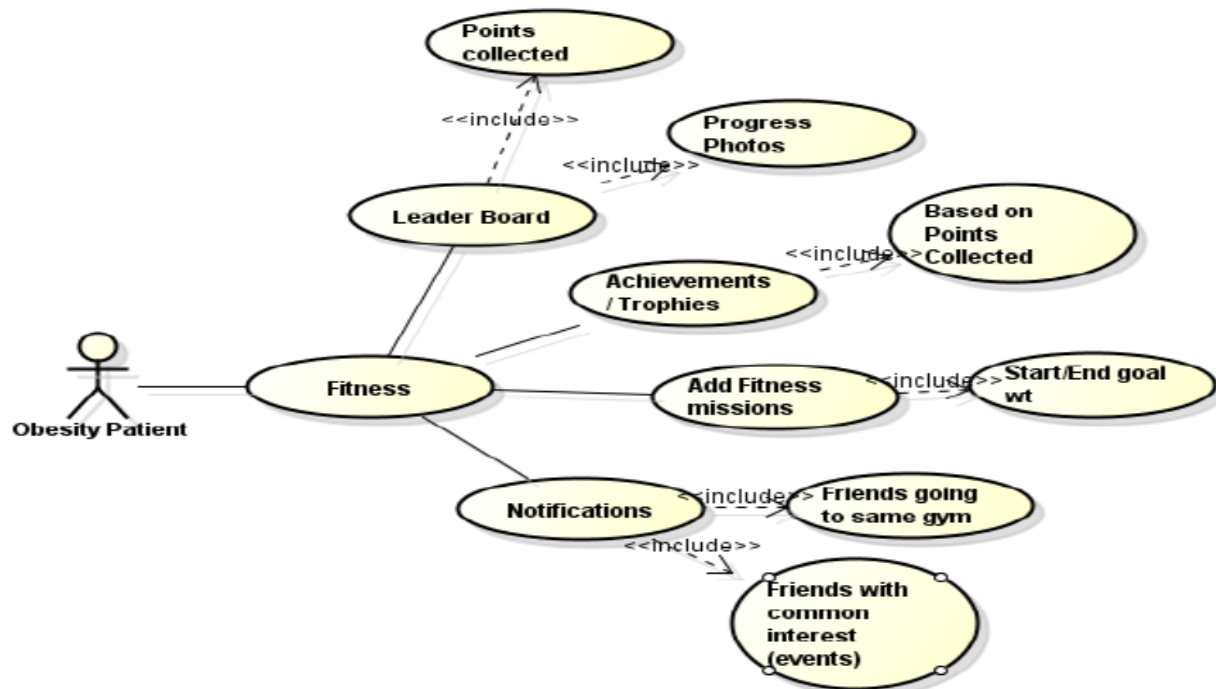### 3.3.1 Use Case 1: General Patient, Admin activities
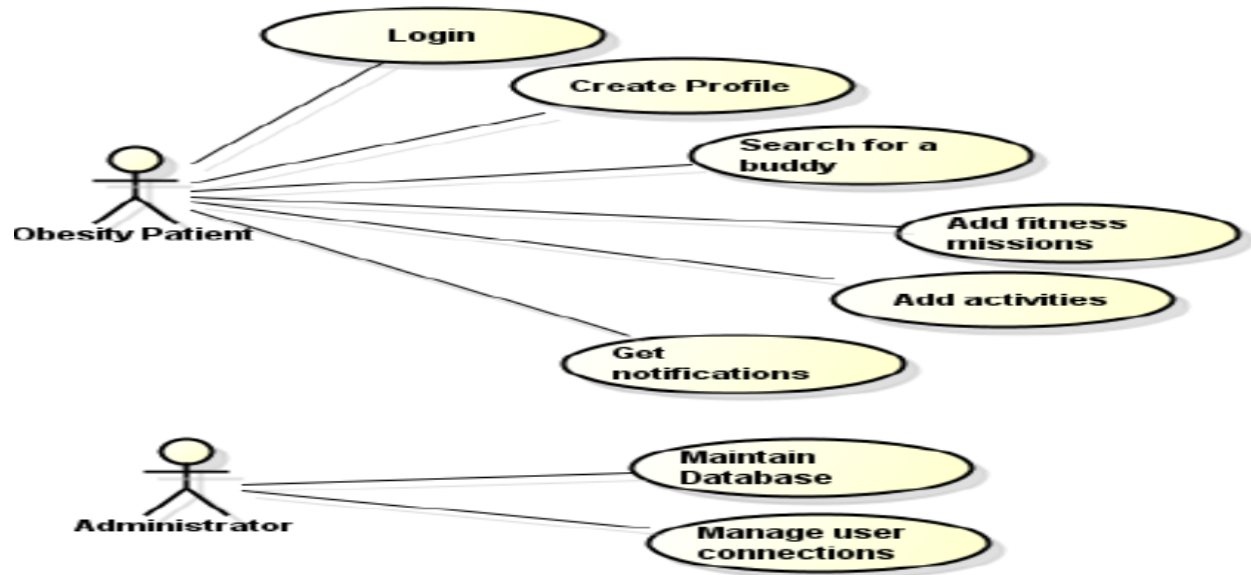
3.3.2 Use Case 2: Search a Buddy
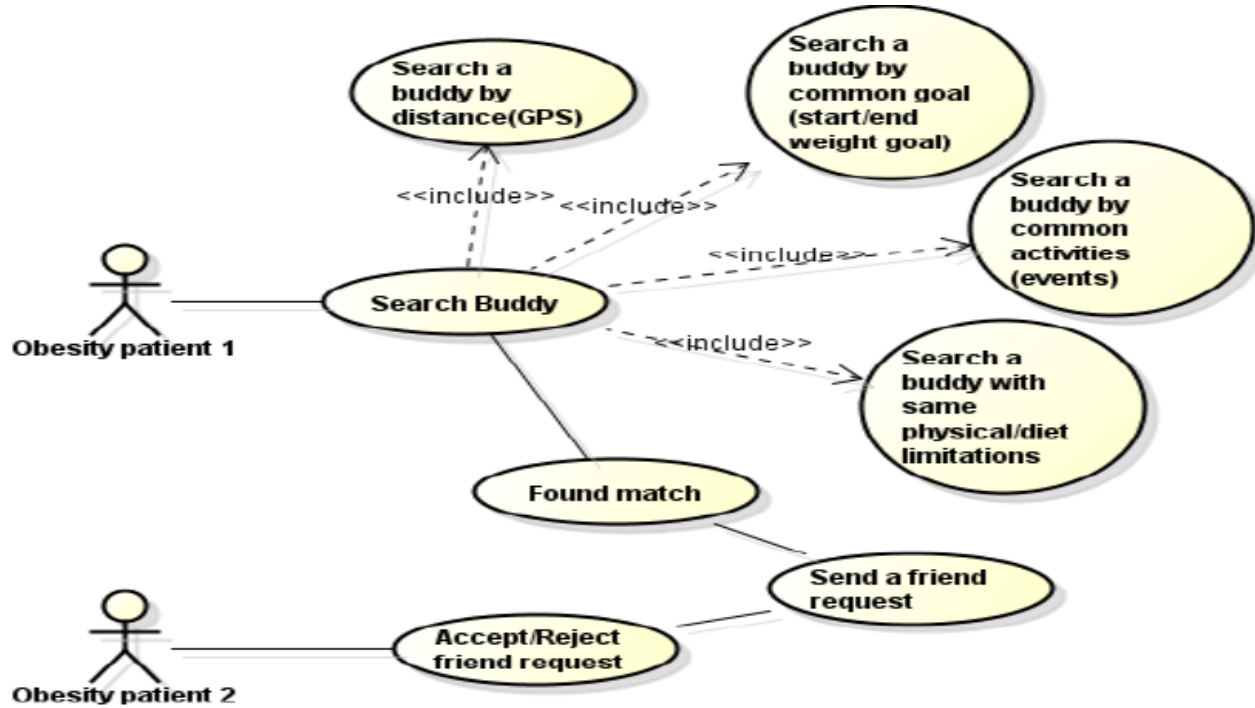
3.3.3. Use Case 3: Getting Notification

3.3.4 Use Case 4 : Fitness Activities

3.3.5 Fully Dressed Use Case:

Primary Actor: Obesity Patient

Goal in Context: Obesity Patient searches for nearby friend as a workout buddy and having common interests or attending common events.

Scope: Social. An application to increase happiness for obesity patient.

Level: Summary

Stakeholder and Interests:
Obesity Patients: Wants to make friends and easy way to do that.
Administrator: Maintain user database and user connections.
Developers: Develop this app to increase happiness for obesity patients.

Obesity Patient: Wants to find a workout buddy, make friends with common interests and keep track of physical fitness and progress.

Precondition: None

Minimal Guarantee: Patient can search for a buddy, send and receive friend requests based on the distance, same weight goals and same limitations.

Success Guarantee: Obesity patient has some fitness goals, wants to find a buddy and get connected with that buddy.

Trigger: Obesity Patient needs a buddy.

Main Success Scenario:
1. System shall allow user with valid credentials to login
2. User shall be able to create a profile
3. User shall be able to add fitness activities, progress photos and maintain leader board
4. User shall be able to search a buddy based on distance, common interests and common events
5. User shall be able to view other user's profile
6. User shall be able to send, receive and reject friend requests
7. User shall be able to send messages to buddies added to buddy list

Priority: Various

Releases: Several

Frequency of Use: Multiple times in a day

Response Time: In general 3 sec.

3.4 Non-Functional Requirements

3.4.1 Performance

i.   The quality system must be fast enough to keep user's interest. So the response time shall be within 3 seconds for load time for user interface screens, login confirmation.

3.4.2   Usability

i.   The system shall be have no more than 10 buttons per screen.
ii.   The system shall require no more than 10 clicks to complete any action
iii.   The system shall include a title bar.
iv.   The system shall include shortcuts.
v.   The system shall include an undo option
vi.   The system shall include cancel option to return to previous screens
vii.   The system shall include user manuals or help facilities,
viii.   In an error case, the system shall display an error message.

3.4.3   Reliability

i.   System must have less than 1hr downtime per two months.

3.4.4   Availability

i.   The system shall be available 99% and not inaccessible for more than 4 seconds. Expected monthly maintenance of 25 minutes is excluded from this uptime requirement number.

3.4.5   Security

i.   Confidentiality – The system shall protect user information from being exposed to unauthorized party.
ii.   Integrity – The system shall avoid fake user information being registered to the system.
iii.   Authenticity – The system shall verify username and password.

3.4.6   Scalability

i.   The system shall support at least 1000 simultaneous interactions.
ii.   The system shall support at least 100,000 customers.
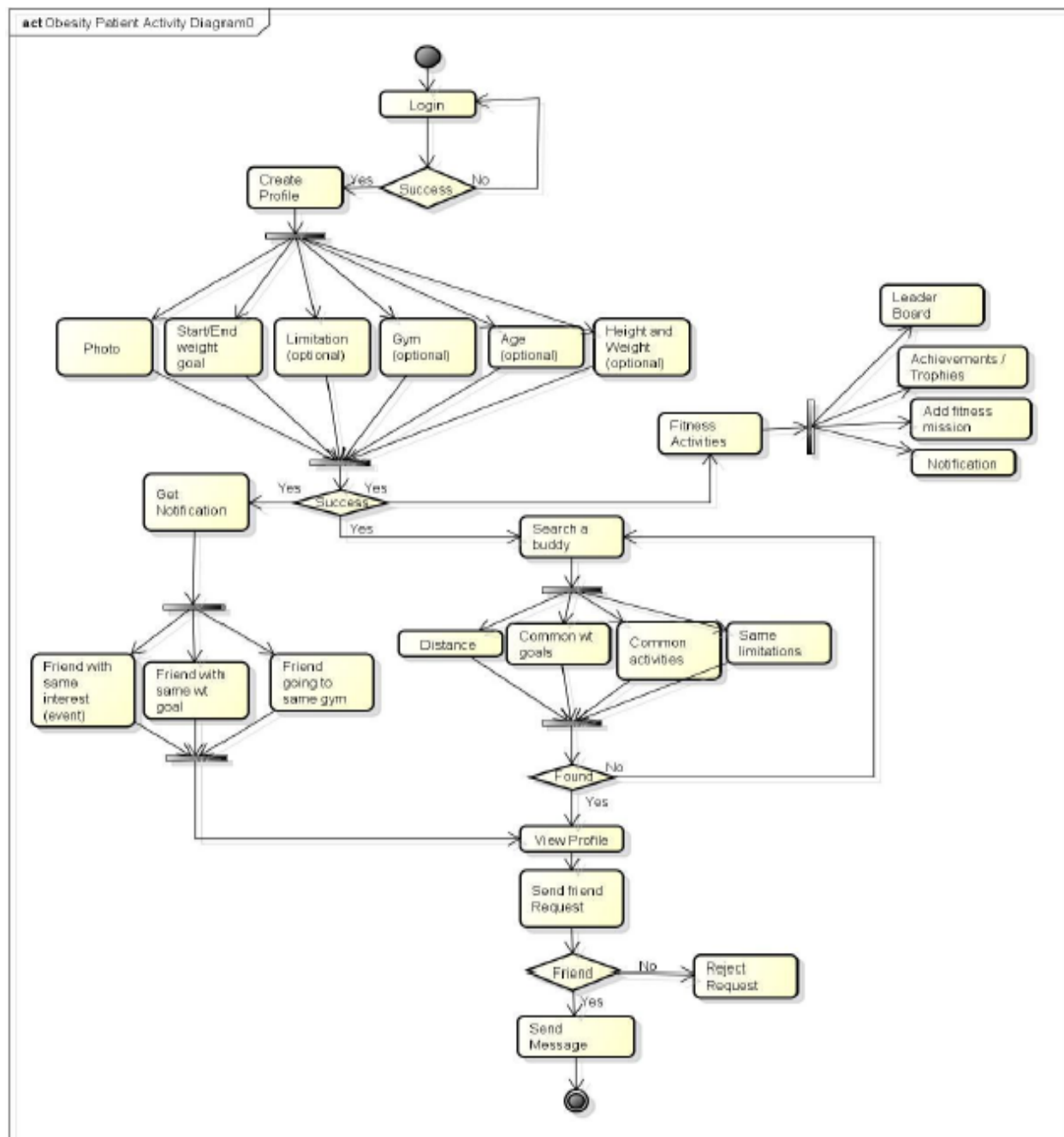
3.4.7   Maintainability

i.   The system shall be up to date with every updates and by fixing the problems.
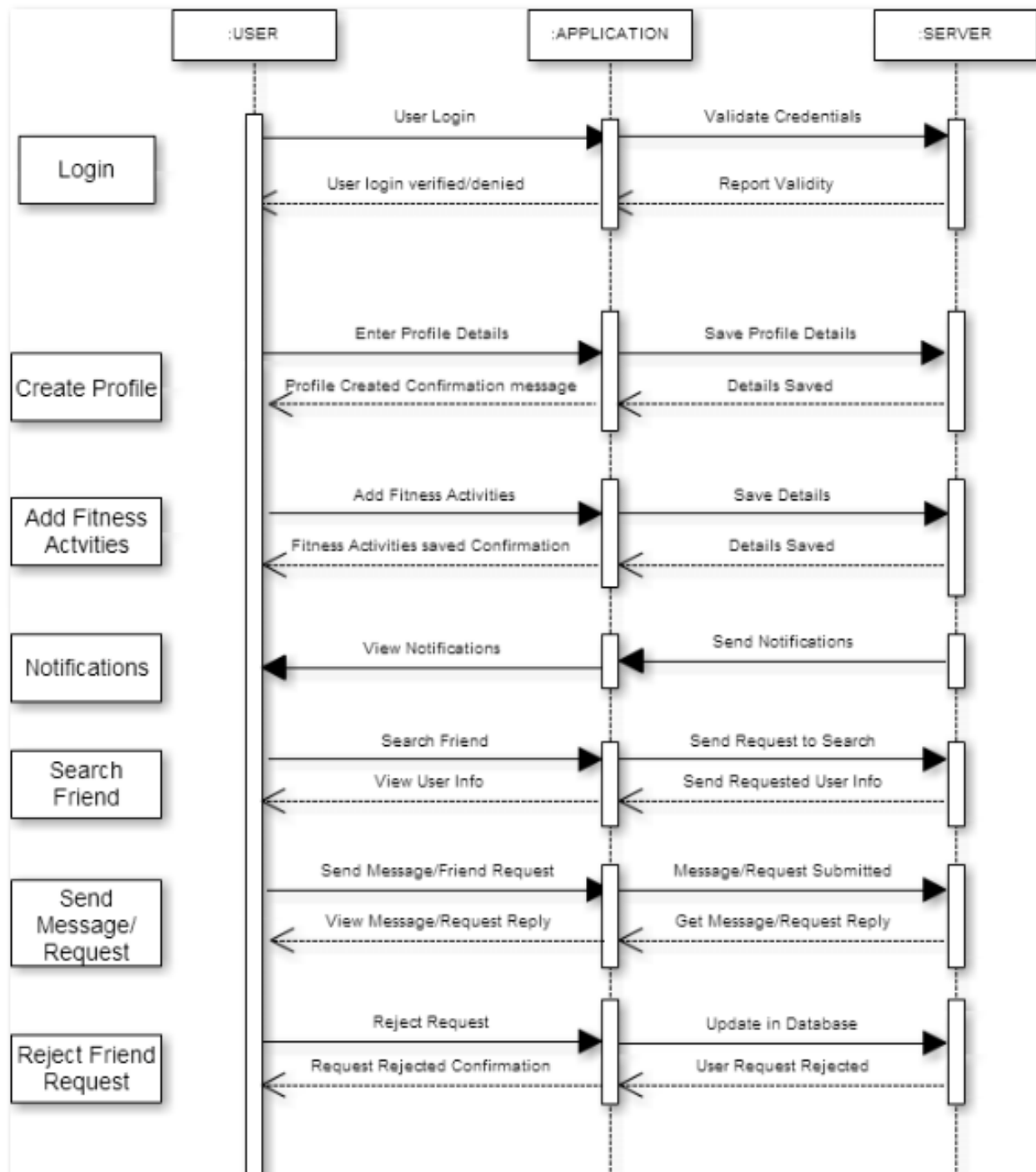
3.4.8   Portability

i.   The system should be able to be moved across a wide range of platforms such as web browser, tablet and mobile with minimal changes.

4. Analysis Models

Activity Diagrams

Sequence Diagram:

Document Approvals

The following Software Requirements Specification has been accepted and approved by the following:

Signature	Printed Name	Title	Date
		Lead Software Eng.	
		Eng. Manager	
		Customer Representative	