Skillcourt Backend

Andy Martinez & Matthew Santiago

Florida International University

Senior Project

## Legal Notices

Missing

## Abstract

There is a lot involved with the training of soccer players. The current system for training is primitive usually involving an instructor and a physical field for playing. The primary objective is to produce a new, modern, and system for training soccer players. The system will be a program with features that will assist players for learning the skills required on their own.

Implementing this system is revolutionary to the way avid players train in the sport. With the functionality and portability that SkillCourt offers, the user can create a personalized regimen for improving skills; thus, SkillCourt offers an overall improvement to both the soccer training and playing experience for players.

(Specific to the document?)

Table of Contents

[Legal Notices i](#_Toc410638752)

[Abstract ii](#_Toc410638753)

[Table of Contents iii](#_Toc410638754)

[1. Introduction 1](#_Toc410638755)

[1.1 Problem Definition 1](#_Toc410638756)

[1.2. Design Methodology 1](#_Toc410638757)

[1.3. Terminology 1](#_Toc410638758)

[1.4. Overview of Document 2](#_Toc410638759)

[2. System Design 3](#_Toc410638760)

[2.1. Overview 3](#_Toc410638761)

[2.2. Subsystem Decomposition 5](#_Toc410638762)

[2.3. Hardware and Software Mapping 6](#_Toc410638763)

[2.4. Persistent Data Management 7](#_Toc410638764)

[2.5. Security and Privacy 9](#_Toc410638765)

[3. Detailed Design 11](#_Toc410638766)

[3.1. Overview 11](#_Toc410638767)

[3.2. Static Model 12](#_Toc410638768)

[3.3. Dynamic Model 12](#_Toc410638769)

[3.4. Code Specification 15](#_Toc410638770)

[4. Glossary 16](#_Toc410638771)

[5. Appendix 17](#_Toc410638772)

[5.1. Appendix A – Use case diagram 17](#_Toc410638773)

[5.2. Appendix B – Implemented Use Cases 19](#_Toc410638774)

[5.3. Appendix C – Detailed Class interfaces 20](#_Toc410638775)

[5.4. Appendix D - Diary of Meetings and tasks 21](#_Toc410638776)

[6. References 25](#_Toc410638777)

## **Introduction**

(missing 1 or 2 paragraphs to introduce the introduction)

### Problem Definition

As it stands, training for soccer can be a very cumbersome feat for the average person to endeavor unaided. Without proper guidance, progression dwindles and a person may not feel obliged to continue.

### Design Methodology

missing

### Terminology

#### 1.3.1 Acronyms

Missing

#### 1.3.2 Definitions

* **Pad Simulator**: An emulated device which will take the place of SkillCourt pads for testing showcasing purposes. This device will offer all of the features a SkillCourt Pad will offer.
* **SkillCourt**: A system which uses SkillCourt Pads and a player interface for training soccer.
* **SkillCourt Arena**: A 20’x40’ room with SkillCourt Pads on the walls used for soccer training.
* **SkillCourt Pad**: A physical device with a flat surface that can measure and transmit when and how much pressure it received.

### 1.4. Overview of Document

Missing

## **System Design**

### Overview

Figure . 3-tier Architecture

*Figure X.X. 3-tier Architecture*

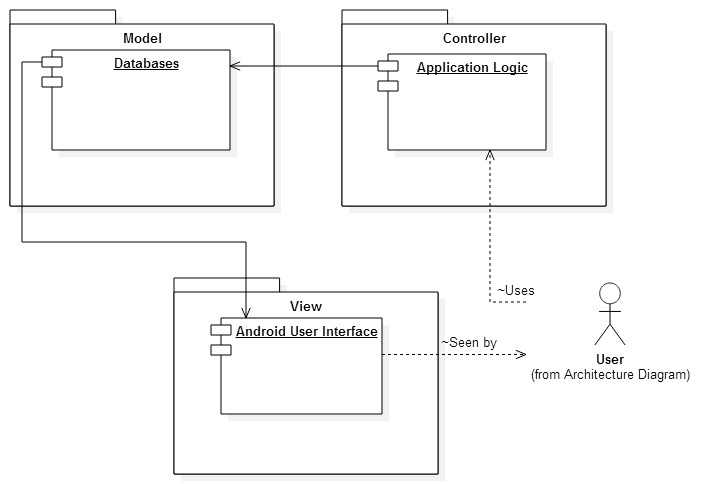
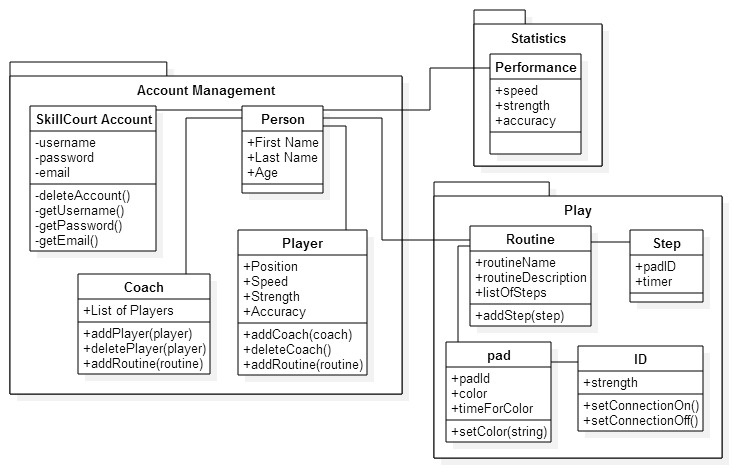
****

Figure MVC Architecture

### Subsystem Decomposition

****

*Figure X.X. Subsystem Decomposition Diagram*

Figure Subsystem Decomposition Diagram

### Hardware and Software Mapping

### Persistent Data Management

#### Coach Information Storage

The system stores the information from the coach when he/she registers to make an account. This information includes the coach’s username, email, password, and some personal information such as first name, last name, and age

#### Player Information Storage

The system stores the information from the player when he/she registers to make an account. This information includes the player’s username, email, password, and some personal information such as first name, last name, and age. Additionally, the system will store the position of the player in the field.

#### Routine Storage

When a player creates a custom routine, the system will store this new routine. It will save to the database the routine name given by the player as he/she creates it, a unique ID created by the system and a string that will be converted to the series of steps in the routine. Additionally, the system will automatically have stored several routines for the player to choose from.

#### Performance Statistics Storage

The performance of the player while using the pads will be stored by the system. Statistics from the performance will include strength, speed, accuracy and time.

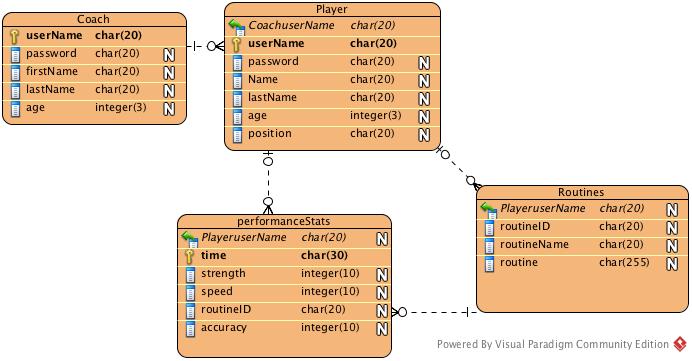


Figure 4: Database table

### Security and Privacy

#### Credential Authentication

The SkillCourt-Backend system will be accessed by players and coaches who have previously registered their credentials by making an account. In the mobile device, only players will be allowed to log in. As they enter the application, the system will provide them with a form to sing in using their previously created username and password. The system will then verify their credentials and verify that they have previously registered as “Players.” Once logged in, players will be restricted to access only their information and statistics. They will not have access to other player’s information.

In the case of coaches, they will not be allowed to sign in through the mobile device application. As they try to log in with their credentials, the system will check that they are not registered as “Player”, but as “Coach” and will return a message stating they cannot log in through the mobile device application. Additionally, users will be allowed to continue on the application as “guest,” but they will have no access to information.

In the webpage, both players and coaches will be allowed to log in by submitting their username and password. In both cases the system will verify that they have registered as players or coaches and will give each the appropriate access to information. Once logged in, players will only be allowed to access their information, while coaches will be allowed to access the information of all players they are connected to. No guests will be allowed on the webpage. In both, the webpage and the mobile application, users will no registered credentials will not be allowed to access any information

#### Data Encryption

The mobile device application will be using javax.crypto as a tool for data encryption. This allows the application to receive the password that the user inputs and use a cipher to encrypt it. Only the encrypted data will be stored in the database. The same library provides a decryption mechanism that allows the mobile application to get the data stored in the database and decrypt it as needed.

## **Detailed Design**

### Overview

### Static Model

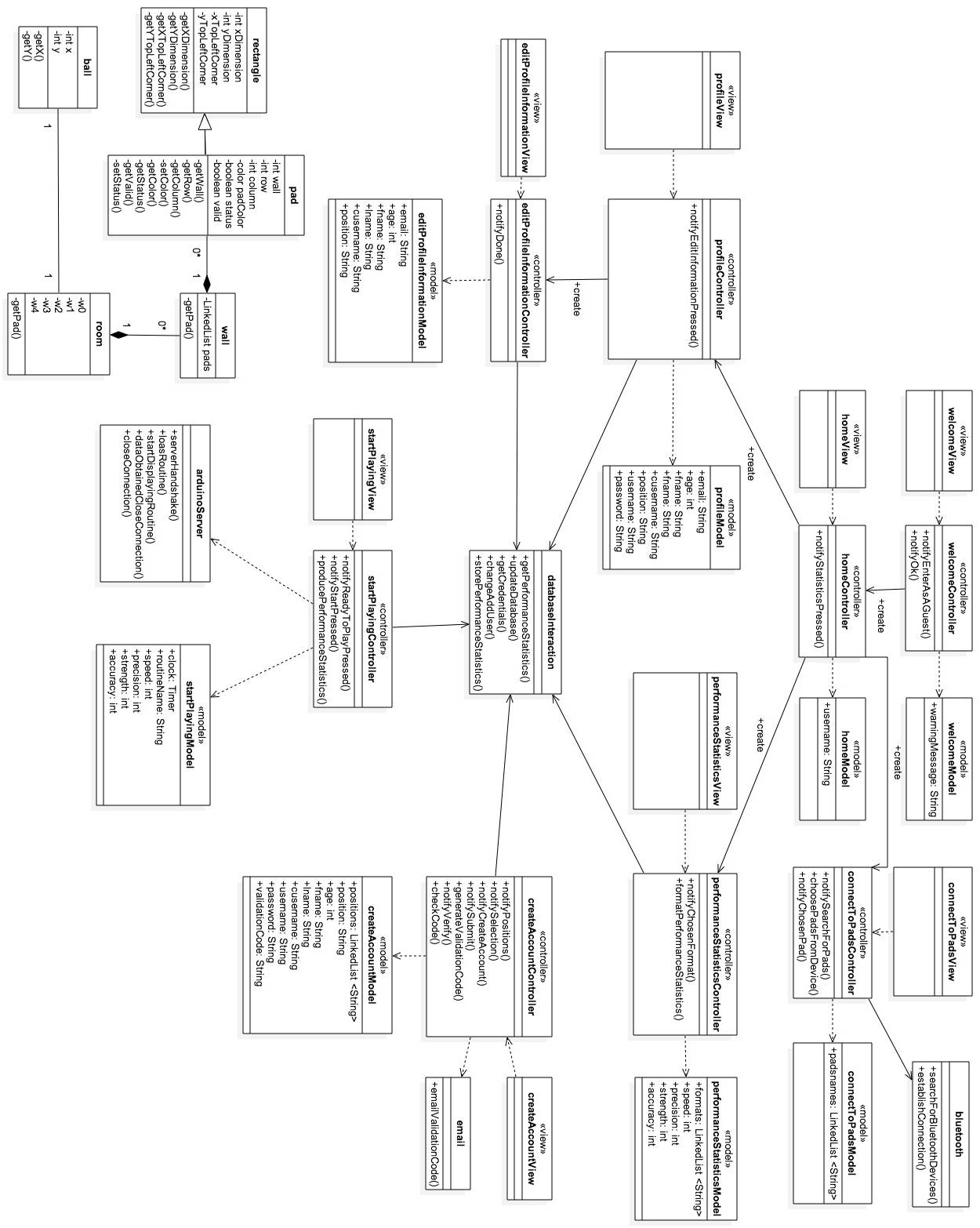


Figure 5 Class Diagram

### Dynamic Model

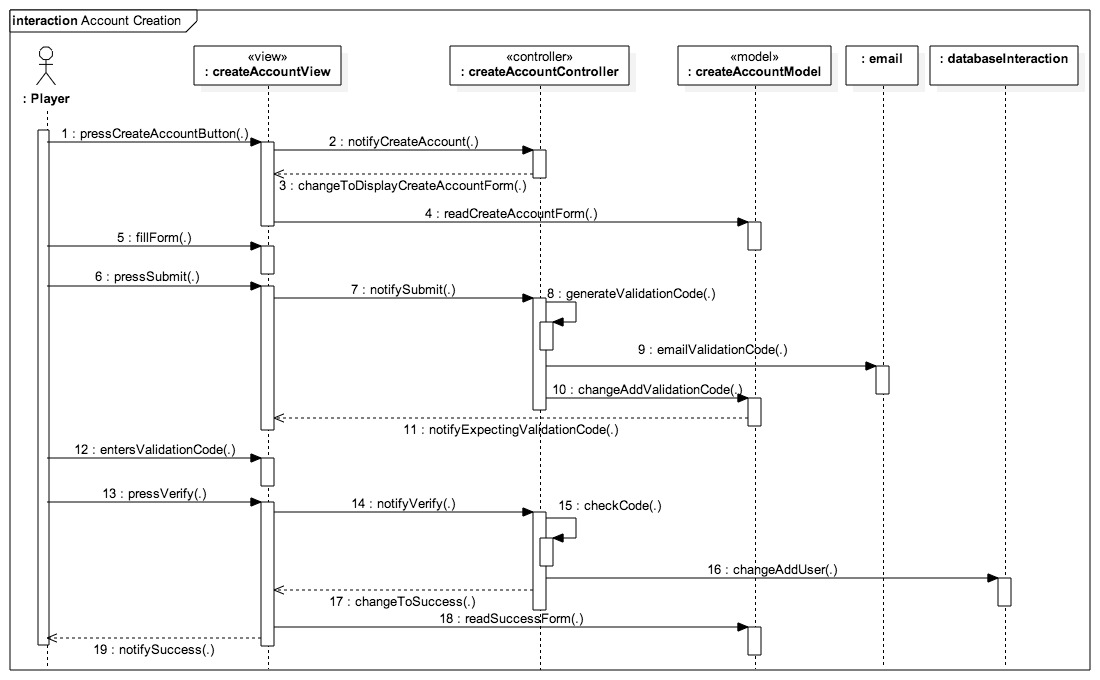


Figure 6 Account Creation Sequence Diagram

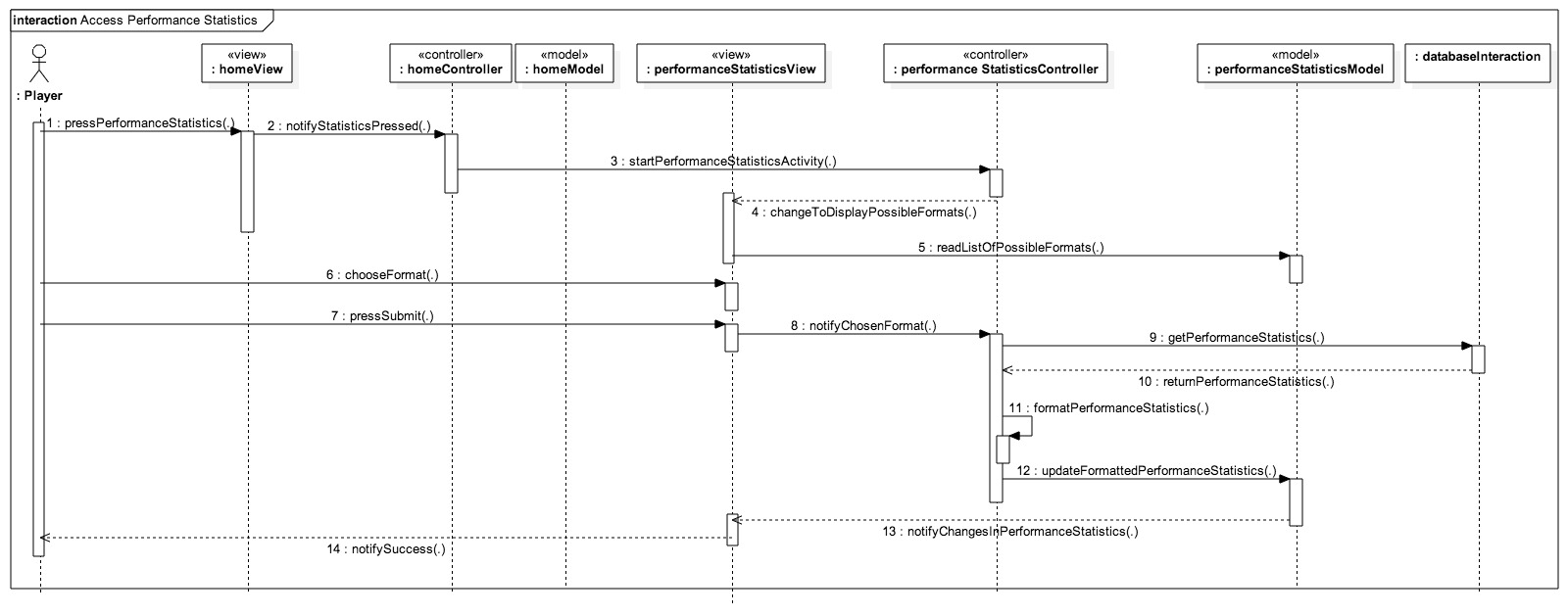
****

Figure 7 Access Player Statistics Sequence Diagram

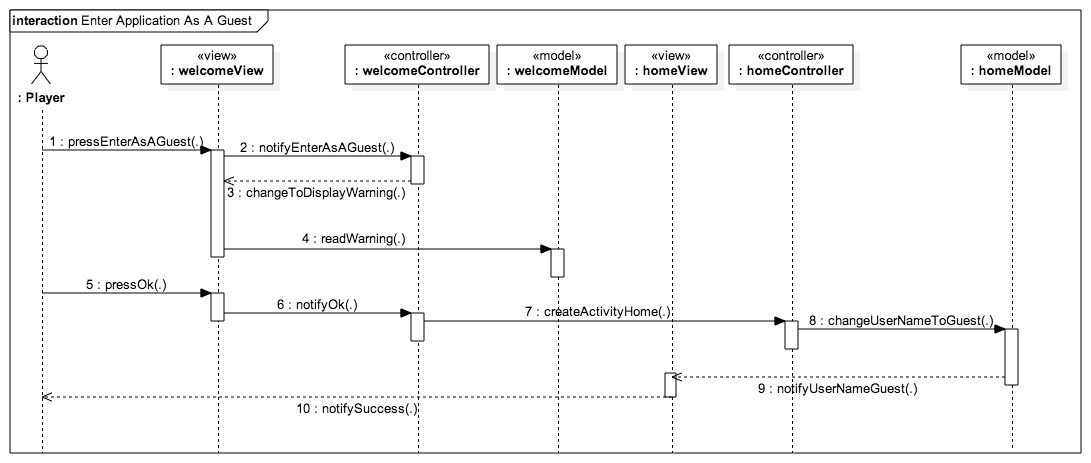


Figure 8 Enter Application as A Guest Sequence Diagram

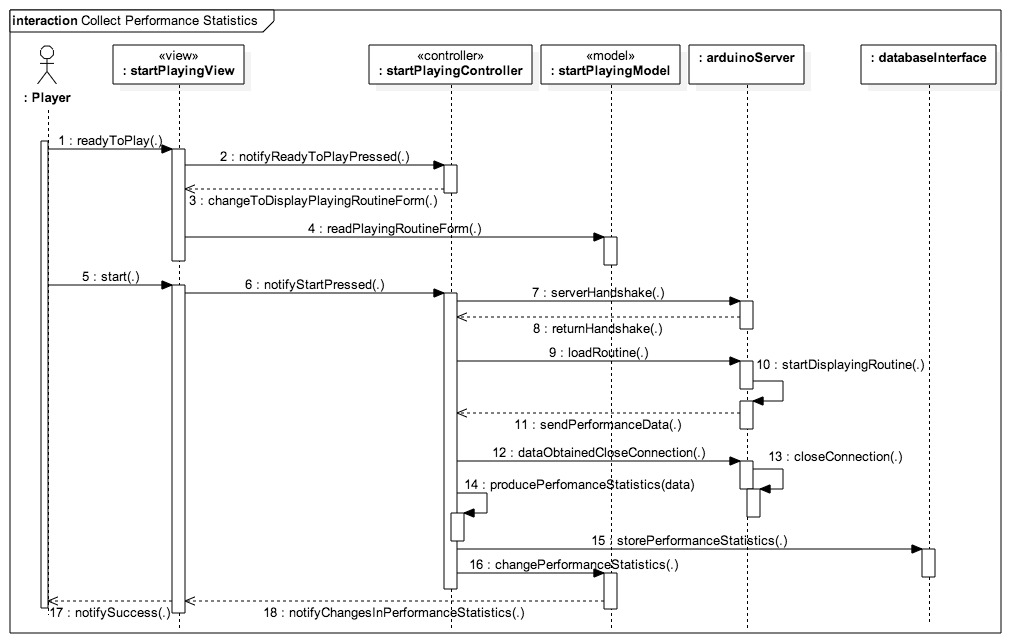


Figure 9 Collect Performance Statistics Sequence Diagram

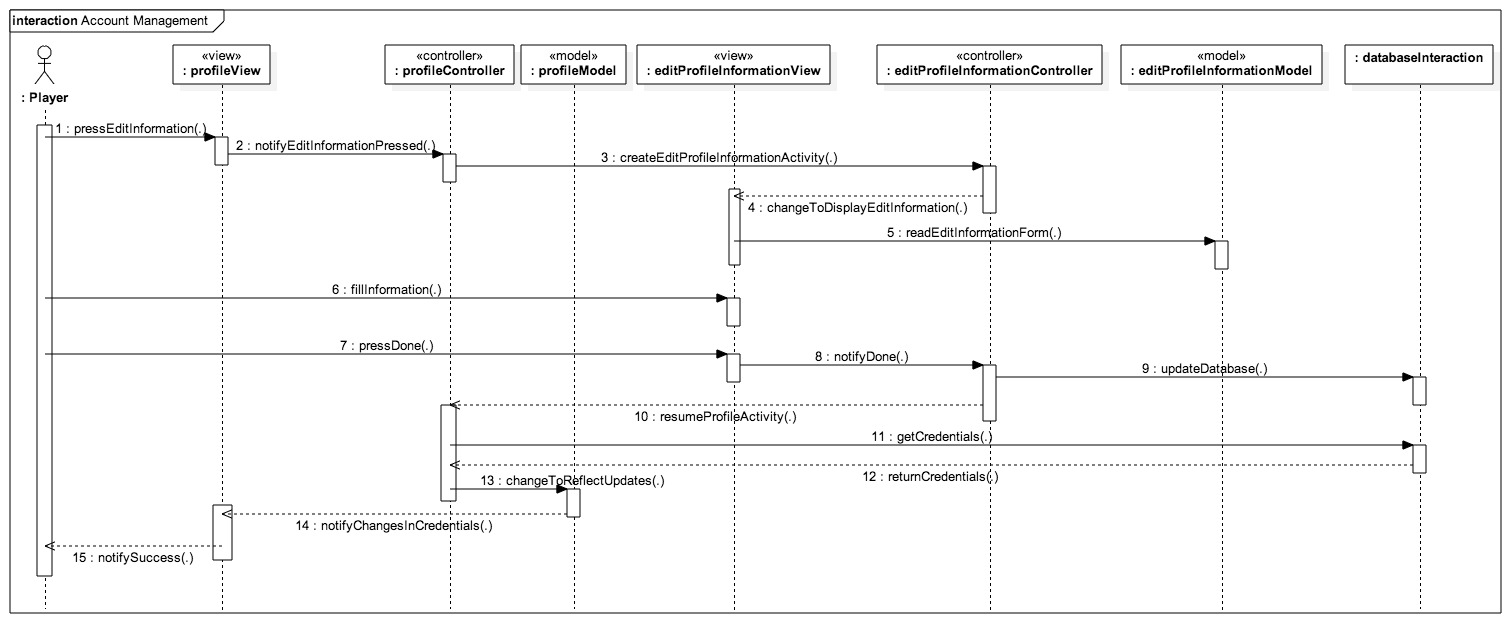


Figure 10 Account Management Sequence Diagram

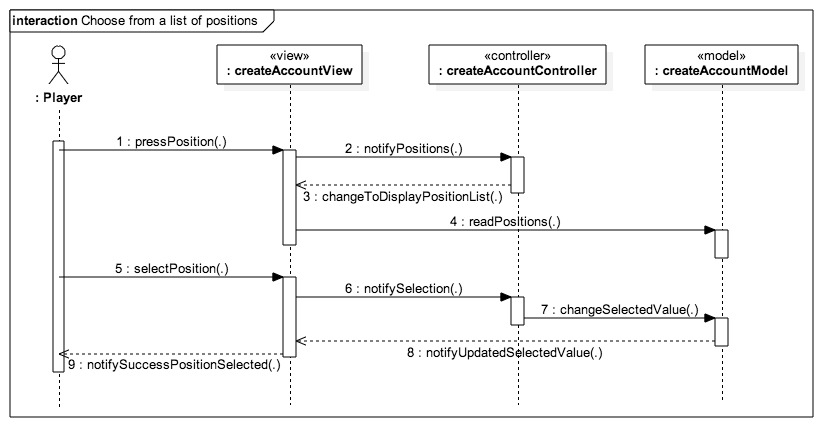


Figure 11 Choose from a list of positions

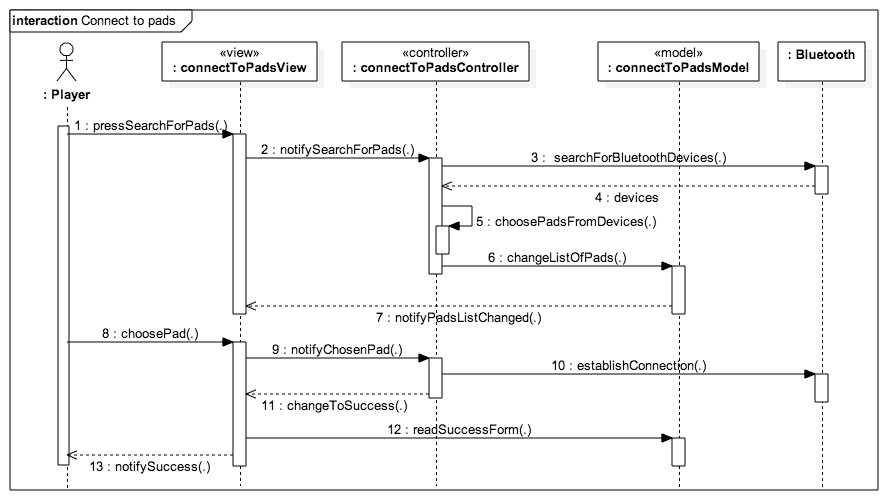


Figure 12 Connect to Pads

### Code Specification

## Glossary

## Appendix

### Appendix A – Use case diagram

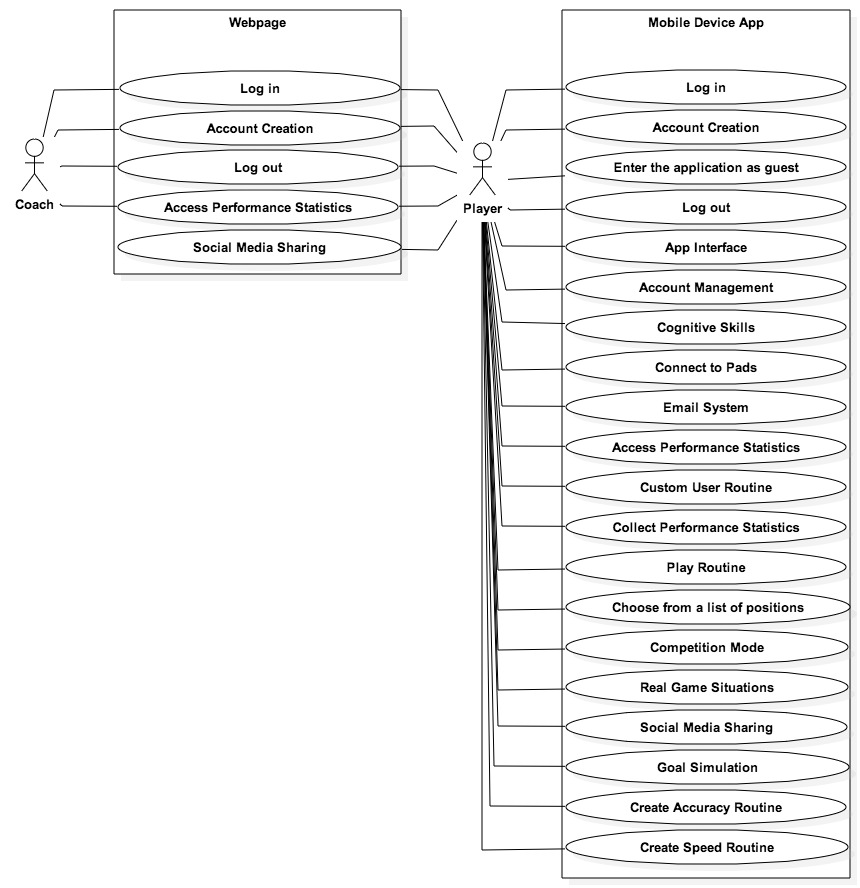


Figure 13 Use Case Diagram

### Appendix B – Implemented Use Cases

### Appendix C – Detailed Class interfaces

### Appendix D - Diary of Meetings and tasks

1. **Meeting 1:**

Monday 1/19/15

@8:57pm

Meeting on Mingle starts

In attendance: Andy Martinez, Matthew Santiago

@9:08pm

Arranging possible meeting times for Requirements Elicitation:

* Tuesday 1/20 9:00 pm
* Wednesday 1/21 before 2:00 pm
* Wednesday 1/21 after 7:30 pm

@9:23pm

Chose for Andy Martinez to be Scrum Master for the first sprint

@9:28pm

Sent message to @Product Owner for their preferred meeting time:

* Awaiting reply…
* **1/20 @10:43am** Reply Received, Meeting Tuesday 1/20 at 9:00 pm confirmed

@9:33pm

Meeting Dismissed

1. **Meeting 2:**

Tuesday 1/20/15

@9:00 pm

Conference Call Started

In attendance: Matthew Santiago, Andy Martinez, Jaime Borras, Gummi

@9:02 pm

Introductions

@9:12 pm

Stories:

1. Skill development (accuracy, speed, intensity)
   1. User chooses skill to train from Android App
   2. Measure pressure, time
   3. 3 colors red blue green
   4. Change to red when underperforming
   5. Ball should take 5 seconds to hit the pad, turn red if user takes too long
2. Tracking and analysis
   1. accuracy, speed, intensity, reaction time
3. Single Player/2 Player
   1. Social Media Connection
4. Mapping a game
   1. Pad light up, hit pad with ball in proper time, another pad lights up, hit with ball in proper time, continue until you make goal (certain number of successful iterations)
   2. Beginner, Intermediate, and advanced levels
5. Simulator (simulate a pad)
   1. Android application?
6. (Backend look at particular game (real game) and simulate a player or play within that game)

@9:32 pm

Set meeting with Gummi on 1/21 at 11:00 am in GL 693

@9:38 pm

Meeting Dismissed

1. **Meeting 3:**

Thursday 1/22/15

@9:00

Conference Call start

In attendance: Andy Martinez, Matthew Santiago, Jaime Borras

@9:07

Review stories

Predetermined Routines:

* Separate Goal Simulation into its own story

Performance Statistics:

* Add statistics about specific game

Competition Mode:

* Separation of social media into a new story is good
* Have different routines for single and multiplayer

Custom User Routine:

Pads Simulator:

Real Game Simulation:

Social Media Sharing:

Website:

* (Differentiate between coach and player?)
* Webpage access

@9:46

Meeting Dismissed

1. **Meeting 4:**

Tuesday 1/27/15

@ 6:30 pm

Meeting starts

In attendance: Jaime Borras, Andy Martinez, Matthew Santiago

**Github upload schedule:**

Matthew upload from 10:00pm - 10:59pm

Andy upload from 11:00pm - 11:59pm

**Weekly in-person meeting:**

Thursday between 2:00pm - 6:00pm to prepare for weekly meetings with project owners

**Coding standards**

Comment Convention:

/\*\*

\* Comment goes here

\* and here

\*/

fun()

{

random code

}

**Indentation:**

1 tab per pair of curly braces

**Variable names:**

private \_variableName

public variableName

**Reports:**

**Matthew:** Feasibility report & Initial System Design

**Andy:**  Project Plan & Initial Object Design

**Read up on:**

Android BlueTooth library

Java Databases

1. **Meeting 5:**

Tuesday 1/30/15

@ 4:00 pm

Conference Call starts

In attendance: Jaime Borras, Andy Martinez, Matthew Santiago, Gummy

Complete?

## References