

Design Manual

Powerlifting app using Movesense wearable technology

**Student Name: Samuel Orekoya**

**Course Name: BSc (Hons) in Software Development**

**Student ID: C00215885**

**Supervisor: Joseph Kehoe**

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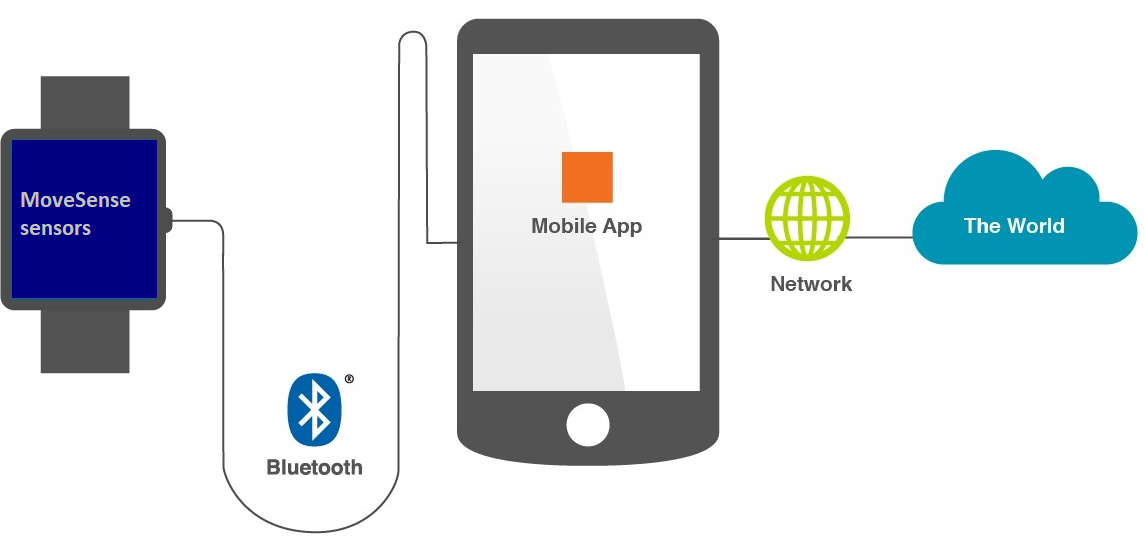
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# Introduction



The purpose of this document is to define the technologies and elaborate on the functionality identified in the functional spec, after reading this document a developer should be able to easily understand the internal architecture of this application and with this start development of the application. With all this information that will be included in this document a developer should be able to develop and deploy this application in its entirety. The aim of this document is to give a more in dept technical and visual outline of what the application will be and how it should look when being created.

The applications main purpose is to improve any user’s strength training by analysing the three main lifts and displaying valuable information like speed and power, from the movesense sensors which will be attached to some part of a user’s body similar to how a wearable or watch smart would be positioned. This will be implemented via the use of technologies like C++, Xamarin, C#, MySQL and AWS. This design document will shape this implementation through a series of factors including Class diagrams, UML, use cases In a SQL format, system sequence diagrams, UI design, screen navigation and a description of the technology planned to be implemented.

# Class design

# UML

# Database tables

## Users table

This table will contain the information of every user which is registered with the application Power Athlon. All users will be added to this table once registration is complete with the application. Within this table there will be 6 columns: User Id, Username, email, password, dormant users and type of user. Here I will display SQL statement are required for the following actions:

* Creation of the table
* Adding a new user to the table
* Changing a user password
* Display the details of a specific user
* Delete user

|  |  |  |
| --- | --- | --- |
| Fields Name | Field type | Field Description |
| user\_Id | INT (6) | This is the unique identification number that will be the primary key. |
| user\_Name | VARCHAR(10) | This would be unique field this field will contain the name of the user. |
| user\_Email | VARCHAR (50) | This field will contain the email of the user. |
| user\_Password | VARCHAR (50) | This field will contain the password of the user. |
| active\_or\_dormant | INT (6) | This field will contain either a 1 or 2. |
| type\_of \_user | VARCHAR(10) | This field will contain either an athlete or coach |

### Table Creation

CREATE TABLE users (

user\_id INT(6) UNSIGNED AUTO\_INCREMENT PRIMARY KEY,

user\_Name VARCHAR(10) UNIQUE,

user\_Email VARCHAR(50),

user\_Password VARCHAR(50),

active\_or\_dormant INT (6),

type\_of \_user VARCHAR(10),

);

### Registration a user

INSERT INTO users (user\_Name, user\_Email, user\_Password, active\_or\_dormant, type\_of \_user)

VALUES (%name, %email, %password, %1, %athlete or %coach);

### Change User Password

UPDATE users SET user\_Password = %newpass WHERE user\_Id = %user\_Id;

### Display user Information

SELECT user\_Name, user\_Email, type\_of \_user FROM users WHERE user\_Id = %user\_Id AND active\_or\_dormant = %0;

### Delete user

UPDATE users SET active\_or\_dormant = %0 WHERE user\_Id = %user\_Id;

## Athlete table

This table will contain the information of every user’s height and weight which is registered with the application Power Athlon. All users will be added to this table after a user login in successfully with the application. Within this table there will be 4 columns: User Id, Username, height and weight. Here I will display SQL statement are required for the following actions:

* Adding height and weight to the table
* Update height and weight
* Display current height and weight

|  |  |  |
| --- | --- | --- |
| Fields Name | Field type | Field Description |
| user\_Id | INT (6) | This is the unique identification number that will be the primary key. |
| user\_Name | VARCHAR(10) | This would be unique field this field will contain the name of the user. |
| user\_Height | INT (6) | This field will contain the height of the user. |
| user\_weight | INT (6) | This field will contain the weight of the user. |

### Table Creation

CREATE TABLE athlete (

user\_id INT(6) UNSIGNED AUTO\_INCREMENT PRIMARY KEY,

user\_Name VARCHAR(10) UNIQUE,

user\_Height INT(6),

user\_weight INT(6)

);

### Input athlete’s height and weight

INSERT INTO athlete (user\_Name, user\_Height, user\_weight)

VALUES (%name, %height, %weight);

### Change athlete’s height and weight

UPDATE athlete SET user\_ Height = %newheight, user\_ weight = %newweight WHERE user\_Id = %user\_Id;

### Display athlete’s height and weight

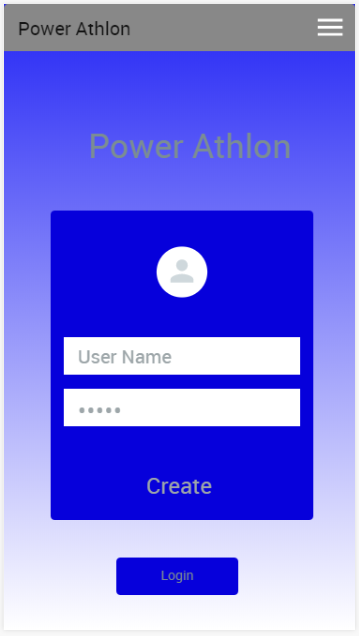
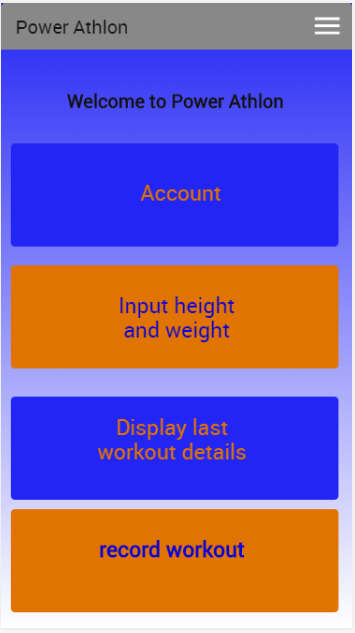
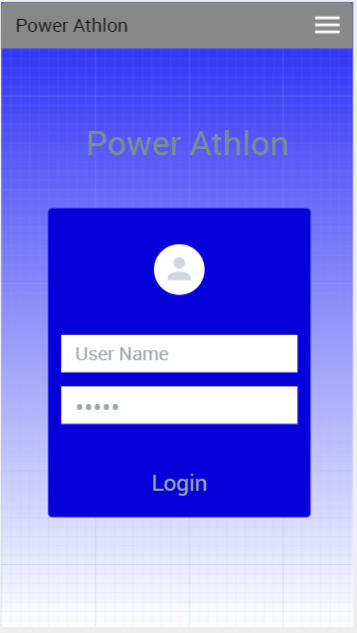
SELECT user\_Name, user\_Height, user\_weight FROM users WHERE user\_Id = %user\_Id;

## Movesense data table

This table will contain the information of every user’s height and weight which is registered with the application Power Athlon. All users will be added to this table after a user login in successfully with the application. Within this table there will be 4 columns: User Id, Username, height and weight. Here I will display SQL statement are required for the following actions:

* Adding height and weight to the table
* Update height and weight
* Display current height and weight

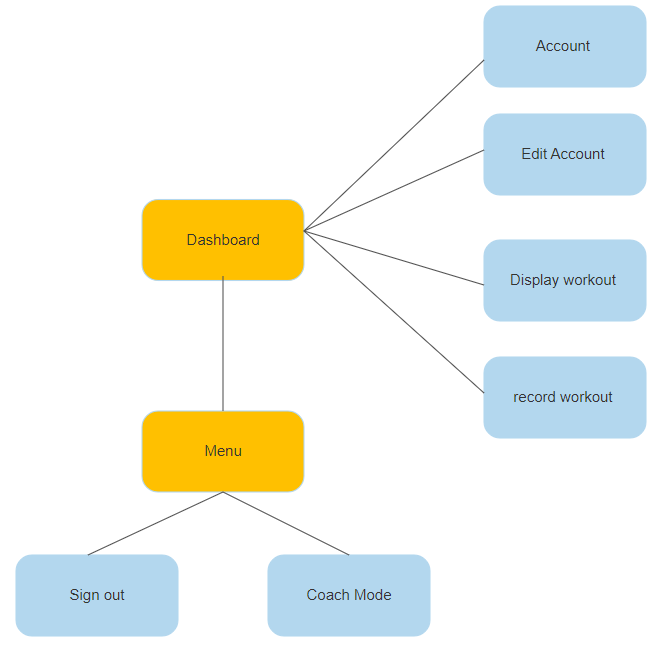
# UI Layout

Registier Login Menu

# Screen navigation

This section displays a simple navigation system where all pages can e accessed from the dashboard or menu. This navigation style that I have chosen for this project is ideal as it is easy for a user new and old user to intuitively use the application. The straightforward user interface lets the user to carry out functions quickly. Due to similar application having the same issue of high set up times, this is extremely important that the UI is very intuitively to reduce this. Having the ability to swiftly navigate and carry out tasks within the application will then in turn helps encourage the user to use the application consistently and often to improve their strength training.



# Technologies

## Movesense sensor

The use of Movesense sensors in this project is very important as this is where the user’s valuable data like speed and power comes from. Movesense sensor are top of the range programable sensors which can be used to the develop wearable applications using use C++ Movesense Device API. The Sensor from Movesense are Versatile, light and small but extremely durable sensor capable of measuring any movement and much more. Very customizable functionality through open APIs that enable development of unique in-device application.

## Xamarin

The use of Xamarin.form in this project is to make this application cross platform with a shared C# backend. Xamarin can be used on all platform with a native interface. There is also a large amount of resources available to Xamarin developers on the web. Visual Studio also includes Xamarin to be used by developer. With Xamarin developers only need to create one application that can be run on each target system.

## C++

The use of C++ in this project is to utilise the Movesense Device API also with a REST-type service framework for building applications in the sensor and to provide data to phone apps. C++ has an open source toolchain with the Movesense.