Institute of Technology Carlow
Software Development

Research Document

Gym Performance System

Year 4 Project

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1.0 Introduction

The purpose of this project is to develop a Gym Client Performance System called Total Fitness. we decided to name the system/project Total Fitness for now after researching similar application names online, this may be open to change in the future. As we are only in the research phase of this project we have a loose idea of what the system will consist of, but the following is open for change:

1. Mobile application
2. Web based dashboard for the both personal trainers and their clients to use
3. Central database
4. API for the database
5. Website to advertise the service

With this research document, we aim to gain a better understanding of the competitors in this market. We will be researching the Android, and Apple App Stores, and also the internet to look for similar applications to compare and contrast my ideas against and to hopefully learn from any mistakes they made. Another purpose of this document, is to research the available technologies to help us decide which will be the most beneficial to use for this project. We have an idea of the technologies that we are going to use as we have created similar projects in the past, but with the help of this document we can be certain that not only will we be using the best technologies for the task at hand, but more importantly that they will communicate together seamlessly.

2.0 Existing Gym Performance Systems

2.1 TrainerFu

TrainerFU [TrainerFU. (2017).] is a popular personal trainer application that is available on both Android and iOS. One of the best-selling points for TrainerFU is the ability to add your own company branding to the application so any clients that you have will think you own the app and thus looks more professional. TrainerFU offers a range of subscription plans which are a rolling monthly contract basis and the first 21 days is considered as a free trial. TrainerFU provide a web based dashboard for the personal trainer to use, they then market their mobile applications towards the personals trainer's clients. Overall the TrainerFU system is very well designed and has some very smart features, as a result of that, system appears to sell quite well and is one of the most popular competitors out there at the moment. Another interesting service that TrainerFU provide, is a one stop shop for gym management software. They sell a slightly tweaked, customer branded version of the software as a service (SaaS) to allow gyms to create, monitor and manage their own personal trainers and clients.

Subscription Plans
- Free (21 Days)
- $29 per month (20 Clients) Approx €25
- $59 per month (60 Clients) Approx €45
- $99 per month (200 Clients, Custom Branding) Approx €80

Key Features
- Interactive Live News Feed (Similar to Facebook or Twitter)
- Live Chat (Allows trainers and clients to chat 24/7)
- Achievements (As clients hit targets they receive achievements which they can share on social media)
- Custom Branding

2.2 Trainerize

Trainerize markets itself as "Personal Trainer Software to Better Connect Trainers and Clients" [Trainerize. (2017).]. Trainerize is aimed at helping Personal Trainers set up their own business. Similar to Trainer FU, Trainerize allows the Personal Trainer to add their own custom branding on the application to give it that professional look and feel. During my researching, I found no other personal training system that has as many features as Trainerize. It appears to be a very well developed, professional solution for Personal Trainers that are looking to set up a business and connect with their clients. The key selling point for Trainerize is the fact that you receive your very own, custom website with any of their paid plans. For me this is a big selling point as in this day in age, I feel that every business needs some form of a website and this solution takes that cost and hassle of setting one up out of the equation. Another feature worth noting is the marketing feature. It allows the trainers to market and advertise their business on social media and other platforms all from within the Trainerize app itself.

Subscription Plans
- · FREE (1 Clients, Custom Branding)
- · $18 per month (15 Clients, Custom Branding)
- · $54 per month (200 Clients, Custom Branding)

Key Features
- · Client Check-ins (Trainer gets notified when a client begins a workout)
- · Nutrition (Allows trainers to create eating plans for their clients)
- · Achievements/Personal Bests (Similar to before, as clients hit targets they receive achievements which they can share on social media)
- · Messaging (This app takes messaging to another level, with in app Skype calls, private messaging, automated messaging and client notifications)
- · Marketing Feature

2.3 The Training Notebook

The Training Notebook considers itself the "Most Affordable and Simplest Personal Training Software Available Today" [The Training Notebook. (2017).]. At a glance, it looks like it has a very clean UI and simplistic layout. This system appears to be relatively new and claims to have had 50,000 user downloads already. Unlike the other applications that I have researched, The Training Notebook does not provide a branded option. It simply provides a platform for Personal Trainers to train their clients and monitor their progress. The longer you look at the user interface for this application, the more you notice it's very basic, almost cheap looking and badly designed. It looks like a the tablet app has no native features so is most likely just a web viewer container displaying the website. The tablet app is only available on Apple iPads and there is no mobile phone application options available, despite their misleading website banner which I included above. Having said that, the app software still appears to sell due to the fact it is cheaper than its competitors.

Subscription Plans
- · FREE (3 Clients)
- · $10 per month (10 Clients)
- · $14 per month (15 Clients)
- · $18 per month (20 Clients)
- · $25 per month (Unlimited Clients)

Key Features
- · Workout Timer
- · Body Assessment (Allows clients to add phone and body measurements to track their progress)
- · Program Page (Allows Personal Trainers to build custom workout plans for their clients and allows the client to access the programs.)

3.0 Evaluation of Existing Applications

After researching the existing competitor applications that are available on the market I have noted that all of the applications provide very similar services for similar prices. In my opinion, the best option to use right now would be Trainerize for a few reasons. Firstly, Trainerize seems to be the most popular, trial and tested application. Trainerize has a key option to allow Personal Trainers to create their own website is another feature that I really like as it dramatically reduces cost for most Personal Trainers when they are starting up their business. All of the researched applications offer a free plan for up to one client which is essentially a trial or test account to allow Personal Trainers to get a feel for the application before signing up for a subscription. All of the researched applications only offer monthly subscription plans from $10pm all the way to $99pm.

Every application contained anywhere from two to three key features features, even The Training Notebook, which claims to be the simplest to use. Although TrainerFU has a great feature with its news feed, I am not sure how well that will work as gym goers tend to boast on more popular social media platforms where their friends and family can see. All of the applications offer both mobile and web application options. Some applications seem to have gone overboard with the features, I would be interested to see how often the skype call your trainer feature is use on Trainerize. I do however like the option to chat via private message with your personal trainer.

When it come to the user interfaces, TrainerFU and Trainerize have native mobile features which is great as it means users will instantly be familiar with some aspect of the application controls. Although The Training Notebook claims to be the simplest to use, its user interface is not as clean and it does not have the familiarity aspect that its competitors have.

4.0 Systems, Frameworks and IDEs for App Development

There are many Systems, Frameworks and Integrated Development Environments that can be used to create web and mobile applications. There are tools that are designed for native or hybrid application development and there are tools that are designed for different programming languages. The tools that I will choose, will be the best tools to carry out the task at hand in my opinion. Before I choose, I will give an overview of some of the contenders.

4.1 Xcode and iOS

"The Xcode IDE is at the center of the Apple development experience. Tightly integrated with the Cocoa and Cocoa Touch frameworks, Xcode is an incredibly productive environment for building apps for Mac, iPhone, iPad, Apple Watch, and Apple TV." [Apple Developer. (2017).]

When it comes to iOS development, Apple are very restrictive. The only true way to develop a native application for Apple's iOS is to use a Macintosh with Xcode. This is because you can only Debug your applications code on a Mac device, and Xcode which is the leading IDE for iOS development is only available on a mac. Most if not all full time iOS developer would own a Mac for this reason. I have seen services where companies provide virtual Mac OSX systems to allow application development in Xcode via a Windows Machine. Xcode is an extremely powerful Integrated Development Environment, but unless you own a Mac you might not be able to use it. Developers creating applications in Xcode for iOS mainly use the Swift language.

Pros	Cons
· True Native iOS Application	· Requires Expensive Mac
· Better Performance	· Expensive App Developer License
· More Mobile Features	· Only deploys to iOS devices

4.2 Android Studio

After researching many opinions, I came to the conclusion that Android studio is considered the best IDE for android application development. "Android Studio is the official Integrated Development Environment (IDE) for Android app development, based on [IntelliJ IDEA](#) " [Android Developer. (2017).] as stated by the official Android website. Android studio focuses on packaging the development, emulation, and debugging all in one nice IDE. An advantage of Android Studio is that it can be installed on any machine such as Windows, Mac or Linux and it's free. You can debug and preview your app, straight on your android device, or you can use the Android Studio Emulator to create virtual devices for testing. When programming applications in Android Studio, the main programming language used is Java.

The only problem with Android Studio it seems, is that it cannot develop iOS applications.

Pros	Cons
· True Native Android Application	· Only deploys to Android devices
· Better Performance	· Miss out on Apple market
· More Mobile Features	
· Free	

4.3 Ionic Framework

Ionic is a framework that allows hybrid, cross platform application development using languages such as Angular, Typescript, JavaScript, HTML and CSS. Ionics framework is packaged into native Android and iOS applications. "Use over 120 native device features like Bluetooth, HealthKit, Fingerprint Auth, and more with Cordova/PhoneGap plugins and Typescript extensions." [Ionic Framework. (2017).] The Ionic Framework has a very detailed and user-friendly developer documentation which contains detailed code examples with native GUI previews for each component. Ionic also has a free app called Ionic View that lets you view your applications that are under development and test them on a real device.

The most important feature of the Ionic Framework is the fact that it allows hybrid, cross platform development. This means that you develop the applications once on a single code base, however the code can be built and package to deploy on native device

Pros

· Cross Platform

· Free

· Some Native Features

· Great Documentation

Cons

· Not True Native Application

· Slightly slower performance

4.4 Xamarin

Xamarin is Microsoft's solutions to the cross-platform problem in mobile application development. Using C#, developers can work on a single code base that is then ported to native Android, iOS and windows code. This saved time and money as you would need less developers to develop and maintain less code. Xamarin is viewed by many as the leading cross platform development solution. Xamarin can be developed via a plugin to the popular Visual Studio IDE. It also had its own IDE called Xamarin Studio for the Windows platform, but after Microsoft acquired Xamarin from the same makers of Mono, they have discontinued Xamarin Studio and put all of their focus on Visual Studio Xamarin plugins. There is also a custom Xamarin IDE called Xamarin Mac for the Macintosh. Xamarin also provides a Test Cloud solution for testing your application. Another important point to note is that Xamarin is totally free to use with Visual Studio for students.

At a first look Xamarin seems to be the ideal solution when it comes to cross-platform mobile developer. However that may not be the case. "When using Xamarin.iOS and Xamarin.Android to build mobile apps with truly native look and feel, you will still need to write a platform-specific layer of code. Thus, at least a basic knowledge of native technologies (Java/Kotlin for Android and Objective-C/Swift for iOS) is required. " [Altexsoft. (2017). *Pros and Cons of Xamarin.]*

Pros	Cons
· .NET C# Code	· Not True Native Application
· Free For students	· Need native code knowledge
· Native Look and Feel	
· Single Code Base	

4.5 MongoDB

"MongoDB is a document database with the scalability and flexibility that you want with the querying and indexing that you need" [MongoDB. (2017).] MongoDB is another noSQL database that stores its data in flexible, JSON Documents. MongoDB is very popular with Data Scientists and is great at storing Big data. MongoDB also has its own global PHP Class that allows a developer to easily and quickly connect and work with data that is stored in MongoDB. A key selling point for mongoDB is the fact that it is schema-less, this means that if you have a flexible schema, mongoDB would be the ideal solutions. MongoDB is also very easy to scale.
Also worth noting is the fact that mongoDB does not need or use table joins.

While mongoDB seems like a good choice for a database, I feel that there are better options available for my project. MongoDB seems to lack service and feature that other systems provide, for example, the Auth service by Google Firebase.

Pros	Cons
· Lightweight	· Data store size larger
· Open Source	· Less query power (No joins)
· JSON	

4.6 Firebase

"Firebase is a mobile and web application development platform developed by Firebase, Inc. in 2011, then acquired by Google in 2014." [8] When researching Ionic and looking at previous app developed using Ionic, you can't help but hear about Firebase. Essentially Firebase is a cloud platform that provides developer with services for their application. They provide a noSQL database that scale with your application as your app grows. Another interesting service that Firebase provide is their own Authentication API. This API handles your user registrations, active user sessions, password reset functions and much more. Firebase has an advanced notification management system to allow app developers to choose when and what notifications to push to their users. Firebase has a great PHP API which if used, allows your PHP application to use the services that Firebase provides.

Another advantage of Firebase is that it is a Real-Time database system. This enable us to make real time updates to our data across multiple devices, It also allows us to make real time push notifications.

Pros	Cons
· Scales with users	· Limited querying
· Free to start	· Not battle tested
· Auth API Features	
· Good Documentation	
· PHP API	

There is many, many different companies all racing to create the best system, framework or IDE to enable developers to use the best, cutting edge technologies to develop their web and mobile applications. In this research document, I have only managed to cover a select few of the most popular. As the speed of technology advancing is so rapid, all of the researched technology could be deprecated in a couple of years, so I need to be careful when choosing the right technologies.

Xamarin is a highly popular framework for hybrid developer but the more I research into it the more complicated it appears. I have also used the Ionic framework in the past on personal projects and I quite like how good their documentation is and there is also lots of tutorials and further documentation online.

Firebase appears to be the way forward when it comes to developing with Ionic. It's simply packed with useful features such as the Auth Service.

5.0 Chosen Framework

 After researching and evaluating the Systems, Frameworks and IDES that are available for me to use. I plan to use the Ionic Framework to build my Total Fitness mobile application. I chose Ionic mainly as I want to be able to release Total Fitness on both the Android and iOS App Stores. Although I have not had too much experience developing in Angularjs or JavaScript before, I feel with Ionics detailed documentation I will be able to learn quickly.

For the database, I have decided to use Firebase. The main reason for this is how easily it can be integrated and how well it works with Ionic. Firebase has an advanced PHP API that will allow me to easily connect my PHP web application to my Firebase database and also allow me to use other Firebase services such as the Auth service.

The web based dashboard application will be developed using PHP as the server side language. I will use HTML CSS and maybe some JavaScript on the client side. For the client side, I will mostly be using Bootstrap. Bootstrap will allow me to quickly design and implement a responsive web dashboard that could also be used via tablets as well as desktops and laptop devices.

6.0 Desired Features

After researching the various competitor application that are currently on the market. I have a good idea of the features that I plan to implement in my application. Most of the popular applications on the market have been there for a while and are packed with features. As I am limited with time I will need to be realistic with the feature that I can implement in that time frame.

Profile Page

Each user of the application with their own profile page that can be viewed by other users. This profile page will show basic information about each user. Your body information will be available to view by your personal trainer

7 Day Calendar

A simple 7-day calendar view where clients can view their training plan in advance.

Private Messaging

This feature will enable personal trainers and their clients to communicate with each other.

Custom Training Plans

Trainers can create custom training routines and can assign those routines to their clients.

Custom Diet Plans

The Personal Trainers can also create and manage custom diet plans and can assigned those diet plan to their clients just like the training plans.

Social Media Login

Login to the application via social media.

Achievements

As a client's body statics progress, achievements will be unlocked and they will be notified.

7.0 References

TrainerFU. (2017). *TrainerFU*. [online] Available at: http://www.trainerfu.com/ [Accessed 15 Oct. 2017].

Trainerize. (2017). *Personal Training Software*. [online] Available at: https://www.trainerize.com/ [Accessed 16 Oct. 2017].

The Training Notebook. (2017). *TrainerFU*. [online] Available at: http://thetrainingnotebook.com/ [Accessed 16 Oct. 2017].

Apple Developer. (2017). *Apple - Developer*. [online] Available at: https://developer.apple.com/xcode/ide/ [Accessed 16 Oct. 2017].

Android Developer. (2017). *Android - Developer*. [online] Available at: https://developer.android.com/studio/intro/index.html [Accessed 16 Oct. 2017].

Ionic Framework. (2017). *Build Amazing Native Apps*. [online] Available at: https://ionicframework.com/ [Accessed 17 Oct. 2017].

MongoDB. (2017). *What is MongoDB?* [online] Available at: https://www.mongodb.com/what-is-mongodb [Accessed 17 Oct. 2017].

Altexsoft. (2017). *Pros and Cons of Xamarin.* [online] Available at: https://www.altexsoft.com/blog/mobile/the-good-and-the-bad-of-xamarin-mobile-development/ [Accessed 22 Oct. 2017].